VOL. 159
NO. 2

AMERICAN GAS JOURNAL

AUGUST
1943

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"Baste Frequently"

We here at Robertshaw are giving that well-known cooking term a wartime meaning. To us, "Baste Frequently" means Baste the Axis — early and often.

And that's just what we're helping to do. From our years of experience in making precision devices such as thermostats, we've turned to the production of precision instruments for aircraft—devices our fliers are using this very minute to "Baste the Axis." And to help our boys "Baste Frequently," we're also producing fuses for hand grenades, primers and ignition cartridges for rockets, as well as boosters and shells for aircraft and anti-aircraft guns.

And with it all, you'll still find a few Robertshaw Thermostats coming off our production lines. They're only for Government projects though—thus keeping our hand in practice for peacetime requirements when that grand day arrives.

For High Achievement in the production of war equipment.

ARMY E NAVY

ROBERTSHAW

ROBERTSHAW THERMOSTAT CO., YOUNGWOOD, PA.

AUG 16 1943

Hair-Splitting Exactitude . . .

Zeiss Toolmaker's Microscope being used for checking dimensions of newly purchased tap against accurate thread form standards.

TO 1/100,000 OF AN INCH !

PRECISION DIMENSIONAL CONTROL ASSURES ACCURACY AND LONG LIFE

in EMCO METERS AND REGULATORS

A human hair is approximately 3/1000 (.003) of an inch thick. Imagine, if you can, splitting a hair into 300 equal parts and being able to measure each individual subdivision. This graphic example is used to illustrate the almost infinitesimal dimensional measurement that is accomplished every day in the Standards Department of the Pittsburgh Equitable Meter Company.

This department, which developed out of the normal demand for manufacturing accuracy in volume production, was originally installed in 1937 and has been greatly expanded since. Many of this company's achievements in handling wartime projects would have been impossible without the dimensional exactness that is provided through our Standards Department. *We have recently been awarded the "A" rating of the Army Air Forces for quality control.*

Accuracy in the performance of meters and regulators made in large production is of necessity dependent upon the accuracy of the tools, jigs and gages that guide the machining and assembly procedures. The hair-splitting exactitude to which these manufacturing appurtenances are held by Standards control assures an accurately made and fitted product, capable of a long and useful life.

PITTSBURGH EQUITABLE METER COMPANY

BOSTON, BROOKLYN, COLUMBIA, BUFFALO, HOUSTON, CHICAGO, KANSAS CITY, PITTSBURGH, LOS ANGELES, SAN FRANCISCO, MEMPHIS, SEATTLE, NEW YORK, TULSA

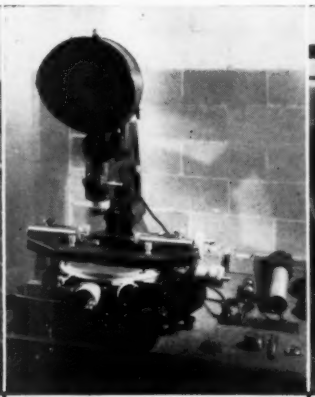
MERCO NORDSTROM VALVE COMPANY
Main Offices, Pittsburgh, Pa.

NATIONAL METER DIVISION, Brooklyn, N. Y.

INVEST TODAY IN BONDS FOR VICTORY

General View of Equipment in Standards Room. These quarters are air-conditioned to assure normalcy while tools, gages and parts are tested.

Jones and Lamson Pedestal Comparator and Measuring Machine being used to check a tap for wear after service.



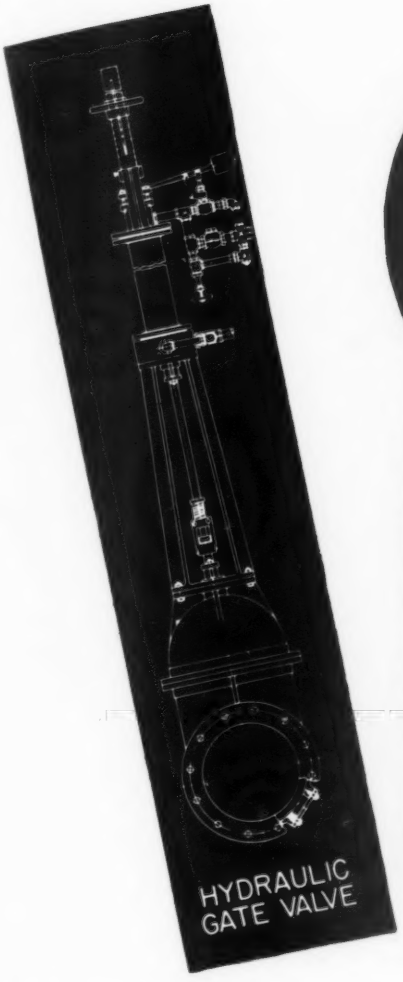
The Zeiss Toolmaker's Microscope in use checking a production part for correct contour against the standard outlined on the projection screen.

Pratt and Whitney Measuring Mac... The Micrometer Graduated D... reads directly to 1/100,000 of an...

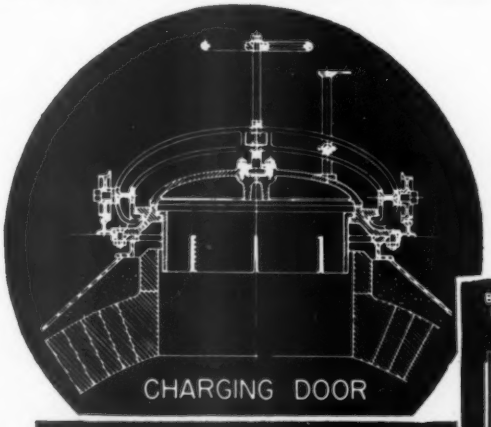
NEED EXTRA CAPACITY?

SPEED UP

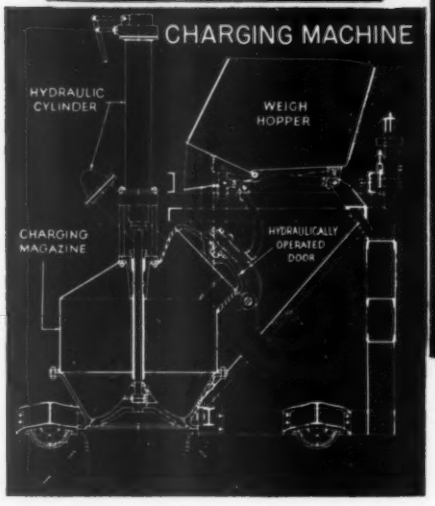
WITH THESE MODERN, EFFICIENT SEMET-SOLVAY PARTS



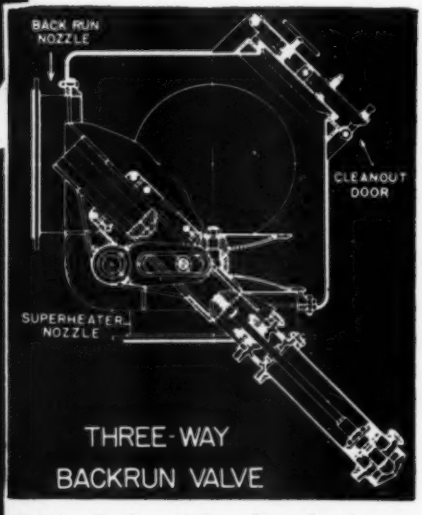
Hydraulic Gate Valve, with automatic stop, permitting opening to any desired degree. Creeper control governs rate of opening.



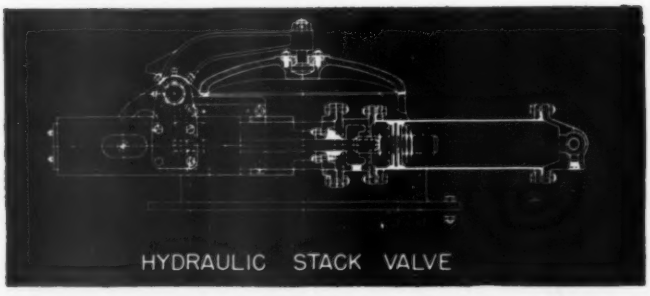
Charging Door. Rolling type allowing unhampered work around charging hole.



Charging Machine. Automatically controlled throughout. Distributes fuel evenly. Built in weigh scale. Cushioned seating for charging door.



3-Way Backrun Valves. Very fast in action. Interior easily accessible. Spray system for reducing carbon and tar accumulation when running on heavy oil.



Hydraulic Stack Valve. Quick acting. Cushioned Seating held tight by hydraulic pressure. Easily accessible for maintenance.

SEMET-SOLVAY ENGINEERING CORPORATION

40 Rector Street **New York, N. Y.**

AMERICAN GAS JOURNAL, August, 1943. Vol. 159, No. 2. Published monthly by American Gas Journal, Inc., at 34 North Crystal St., East Stroudsburg, Pa. Executive and Editorial offices at 53 Park Place, New York, N. Y. Entered as second-class matter, October 7, 1928, at the post-office at East Stroudsburg, Pa., under the Act of March 3, 1879. Printed in U. S. A.

LAST YEAR'S BONDS GOT US STARTED

THIS YEAR'S BONDS

ARE TO WIN!

★ Last year saw nearly 30,000,000 workers voluntarily buying War Bonds through some 175,000 Pay-Roll Savings Plans. And buying these War Bonds at an average rate of practically 10% of their gross pay!

This year we've got to top *all* these figures—and top them handsomely! For the swiftly accelerated purchase of War Bonds is one of the greatest services we can render to our country . . . and to our own sons . . . and our neighbors' sons. Through the mounting purchase of War Bonds we forge a more potent weapon of victory, and build stronger bulwarks for the preservation of the American way of life.

"But there's a Pay-Roll Savings Plan already running in my plant."

Sure, there is—but how long is it since *you've* done anything about it? These plans won't run without winding, any more than your watch! Check up on it today. If it doesn't show substantially more than 10% of your plant's pay-roll going into War Bonds, it needs winding!

And you're the man to wind it! Organize a vigorous drive. In just 6 days, a large airplane manufacturer increased his plant's showing from 35% of employees and 2½% of pay-roll, to 98% of employees and 12% of pay-roll. A large West Coast shipyard keeps participation jacked up to 14% of pay-roll! You can do as well, or better.

By so doing, you help your nation, you help your workers, and you also help yourself. In plant after plant, the successful working out of a Pay-Roll Savings Plan has given labor and management a common interest and a common goal. Company spirit soars. Minor misunderstandings and disputes head downward, and production swings up.

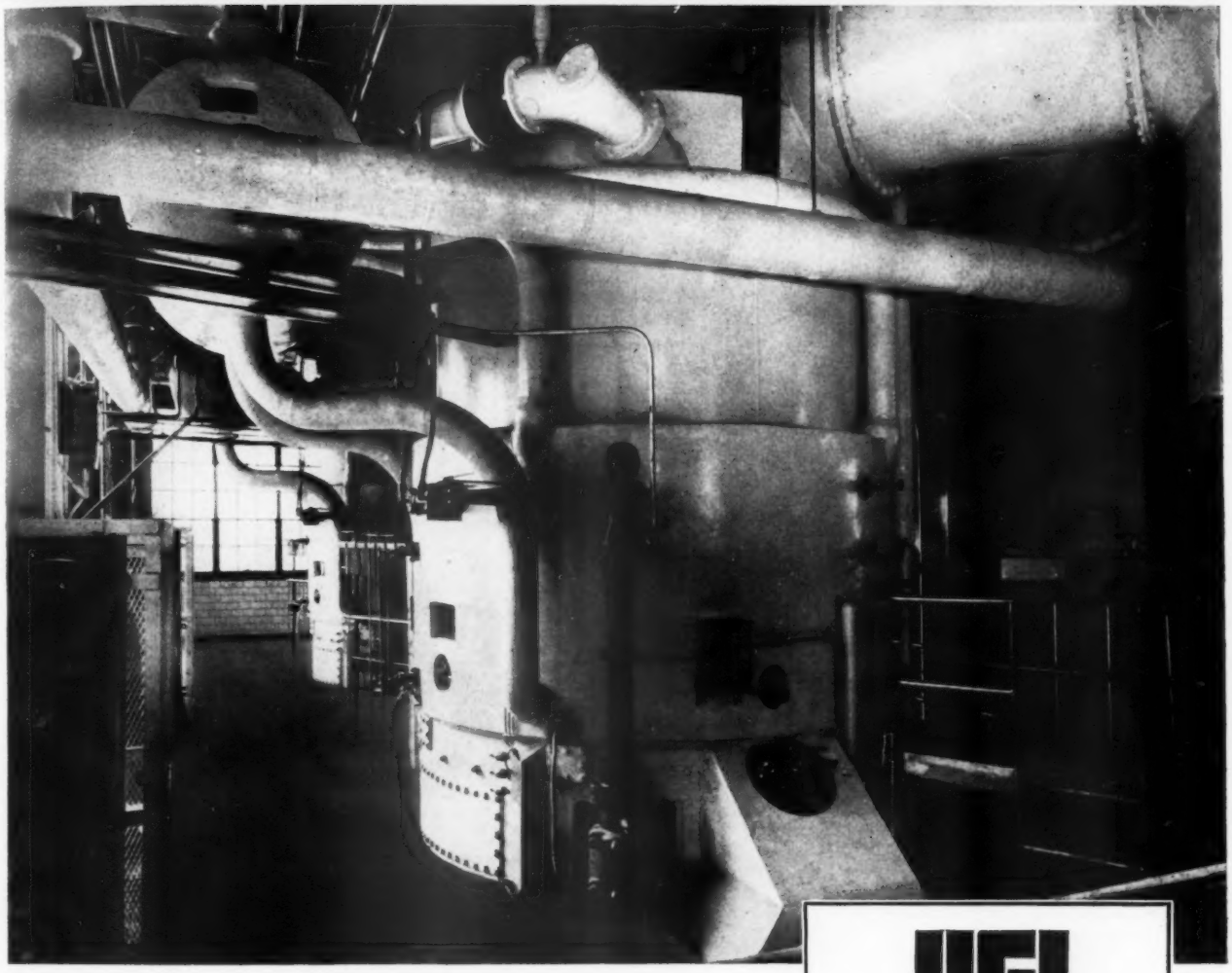
War Bonds will help us win the war, and help close the inflationary gap. And they won't stop working when victory comes! On the contrary—they will furnish a reservoir of purchasing power to help American business re-establish itself in the markets of peace. *Remember, the bond charts of today are the sales curves of tomorrow!*

You've done your bit Now do your best!

THIS SPACE IS A CONTRIBUTION TO AMERICA'S ALL-OUT WAR EFFORT BY

AMERICAN GAS JOURNAL

U. G. I. MODEL "D" MECHANICAL GENERATOR



Model "D" is the latest development of the U. G. I. Mechanical Generator. Four U. G. I. Model "D" Mechanical Generators are now in operation and one is on order. The operating features and advantages of the Model "B"—of which 94 are installed or under construction—have been retained.

The design of the bottom construction has been simplified. A ratchet drive, actuated by high pressure oil through a hydraulic cylinder, provides the motive power for the rotation of the grate.

The tuyere for admission of air and steam, the water jacket, rotating sectional ash pan and method of ash extraction which largely account for the success of Model "B" are incorporated in Model "D" without change.

UGI Equipment

UNITED SERVICES PROVIDE

EXPERIENCE IN DESIGN
United has over 50 years experience in gas plant design.

EFFICIENT APPARATUS
United has pioneered major developments in water and coal gas production.

ECONOMICAL CONSTRUCTION
United has large well organized forces for gas plant and general construction work.

EXPERIENCE IN OPERATION
United has experienced plant operators for securing most efficient results.

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK PHILADELPHIA CHICAGO

CRYSTOLON GENERATOR LINING

Pays for itself—

A CRYSTOLON (SiC) Brick generator lining recently completed 19,000 hours of service without repairs and paid for itself by savings in cleaning costs alone. Clinkers will not penetrate the dense surface of these silicon carbide brick and thus a saving on cleaning costs of six man hours per day was made at this plant.* When the clinker ring is broken it easily falls free leaving the brick clean and chemically unaffected. CRYSTOLON Brick stood up three times longer than any type of refractory lining previously used. After 19,000 hours, new CRYSTOLON Brick were installed up to the top of the doors. The original lining, above the doors, was left in to serve through this coming winter.

*Name of plant on request.

NORTON COMPANY • Worcester, Massachusetts

NORTON ELECTRIC FURNACE FUSED REFRACTORIES

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CONTENTS

Mail Sorting and Delivery System—Fred A. Herr 9

Annual Meeting A.G.A.E.M. 11

Meter Accuracy Records and Their Analysis—Harry A. Faull 12

Gas Water Heater Ordinance Requires A.S.A. Approval in Los Angeles 18

Review of Gas Rate Litigations—Leo T. Parker 21

War Production Board and Other Administrative Orders 25

Santa Cruz Solves the Hegira Problem—W. B. Stoddard 28

A Handy Block and Tackle Chart—W. F. Schaphorst 30

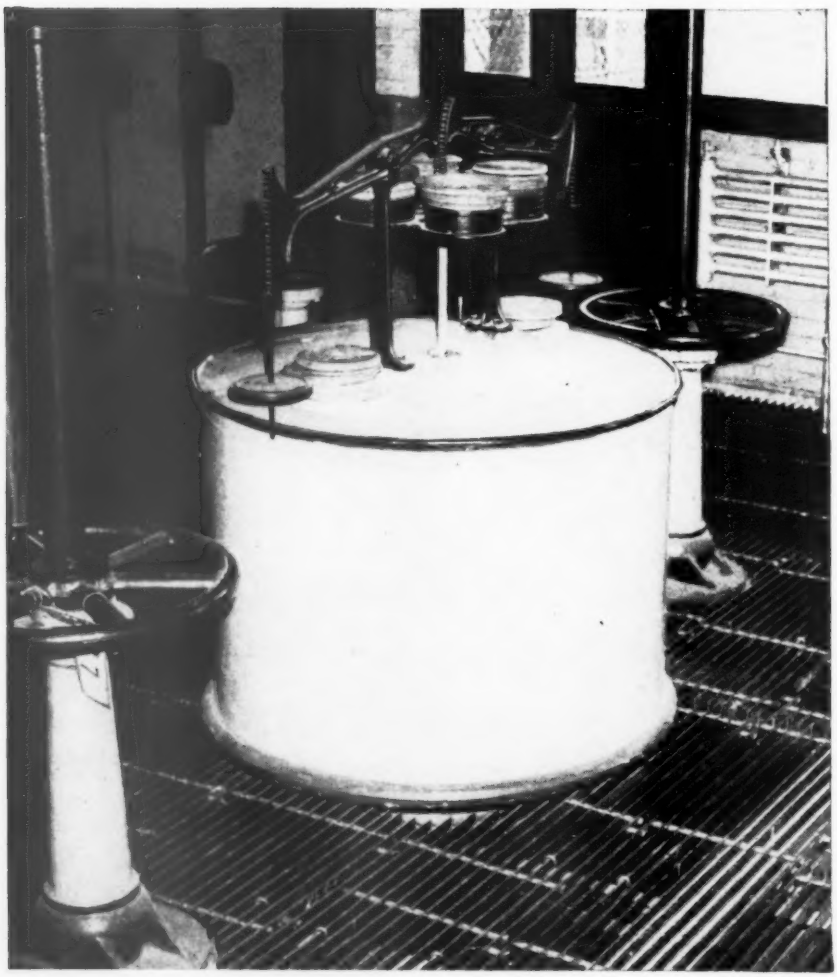
Plant Temperature Adjusted to Meet Outdoor Conditions—James Kearns 31

Market in Liquid Petroleum Gases in 1942 32

New Equipment and Appliances 33

News of the Gas Industry 34

Book Reviews 40



This prize winning photograph is by I. F. Patt of the Providence Gas Company, Cranston, Rhode Island.

EVERYTHING UNDER CONTROL

Today the gas industry can truthfully say "everything's under control!" Despite terrific war demands, raw material scarcities, replacement shortages, and man-power problems, every emergency demand has been met. No major failures in the gas industry have impeded the vital war effort, nor disrupted civilian requirements. Our congratulations to the industry for a job well done.

Gas purification under today's operating conditions has imposed many new problems. And Connelly engineers, working closely with leading technicians in the industry, have come forward with new methods and new ways to handle purifying materials which have helped meet these new problems.

Today, as for the past 60 years, Connelly's facilities and experience are completely at the disposal of the gas industry. It is more important now than ever before, to consult Connelly whenever a gas purification problem arises.

Connelly IRON SPONGE

CONNELLY IRON SPONGE and GOVERNOR CO.

CHICAGO, ILL. ★ ELIZABETH, N. J.

AUGUST
1943

AMERICAN
GAS JOURNAL

VOLUME 159
NO. 2

Mail Sorting and Delivery System

A NEW simplified sorting procedure and streamlined intercompany courier delivery system has been inaugurated by the Southern California Gas Co. which during the initial weeks of its operation has demonstrated its effectiveness for economically speeding up delivery of the 4,000 pieces of inter-departmental mail handled daily by the firm's central division.

The new procedure provides better and expedited service in handling the 30,000 pieces of outgoing and 6,000 pieces of incoming U. S. mail daily, and has likewise eliminated duplication in effort which occurred under the old system in the dispatch of mail and packages.

By
Fred A. Herr

The object of the new procedure, according to R. D. McGuire, assistant secretary of the company, under whose supervision the new central mail bureau is operated, is to consolidate under one central authority the mail handling procedures for the company's central division. Some of this work formerly had been handled by the various departments as their individual problem, with no particular regard for the mailing and delivery procedures in other departments.

Shown here is the new streamlined mail sorting rack installed in its headquarters building, 810 South Flower St., Los Angeles, by the Southern California Gas Co. to expedite the sorting and delivery of mail.

Miss Barbara Mann of the firm's Central Mail Bureau demonstrates how the mail is sorted into bins marked with the code number of each department.

There are four racks, which are installed in a semi-circular pattern. The partitions are removable, permitting any one of the 180 bins to be enlarged or reduced in size in accordance with the amount of mail that must be accommodated each day.

Under the new system, company couriers handle the bulk of deliveries of intercompany mail and packages to the divisional and branch offices and various plant locations. Courier deliveries are now conducted under a supervised routing and scheduling system directed by the mail department supervisor. Under the routing system, and with a central director having knowledge of all out-going and in-coming mail, the duplication of effort which formerly occurred has been eliminated. No longer does the head of one department send a courier with a piece of mail to an office several miles away while practically at the same time another courier leaves from an adjoining office with a delivery to the same or a nearby destination. Under the new system, the two deliveries, along with all other items destined for the same place at approximately the same time, go out by the one courier.

Consolidated Mail Handling

In addition to consolidating mail handling under a central supervisor and streamlining the courier system through regulated schedules and routings, two innovations have been introduced:

All mail delivery points in the company's main office at 810 South Flower St., Los Angeles, and at outlying sections in the central division, have been given code numbers to identify their locations. These code numbers are equivalent to a post office box number and provide quick and easy identification and simplified addressing.

The new setup requires that all letters and packages sent by company courier carry on the envelope or container the addressee's name or department name; the name or place to which delivery is to be made; and

the code number of the mail pick-up station. Mail is delivered to central pick-up and delivery points in the various departments, as in the past; but a code number has been assigned to each of the stations and individuals now take their code number address from the station through which they receive their mail.

Courier Special Delivery

The second innovation is the establishment of a special delivery courier service for important mail addressed to the Flower Street headquarters. This special delivery service may be requested by department heads for mail items of sufficient importance to warrant special handling and faster delivery than ordinary mail.

Three special type envelopes of varying size have been provided for matter sent by courier. This is a 4½ x 9½ inch envelope of medium-heavy paper for small items. The envelope bears the notice "For Messenger Service Only" across the top in front and on the flap in back. The envelope is ruled horizontally in back and front with vertical lines dividing the space into columns headed "Name" and "Dept." The envelope also carries the injunction "Use Again If Possible."

There are also two larger-size envelopes for bulkier mail matter, which are similarly ruled off. A uniform envelope has likewise been provided for mail which is to be sent via U. S. mail to divisional offices where several items are accumulated for mailing in one envelope.

Special Gummed Labels

Eye-catching gummed labels have been prepared for use on mail carried by the special delivery couriers. The gummed labels are 1½ x 4¼ inches in size with three orange stripes crossing the label vertically at one inch intervals. When a courier sees the distinctive label affixed to an envelope or package, he delivers the item to the supervisor who routes it through to its destination on a special trip.

The label bears the sender's and addressee's address, code number, and has spaces for inserting date, hour received at mail bureau, schedule number and courier identification.

To provide a check-back on special delivery items, there has been designed a "Special Delivery Item" receipt form on which is inscribed in spaces provided for that purpose all information pertinent to the piece of mail being given special service. The form shows from whom and to whom the item has been sent; the location code numbers of each; pick-up and delivery time; schedule number and by whom scheduled. The forms are filled out in duplicate, one copy of which is filed in the mail bureau, so that responsibility for non-delivery or delayed delivery can readily be determined.

SPECIAL DELIVERY ITEM Nº 137

FROM: _____ (NAME) LOCA. No. _____

TO: _____ (NAME) LOCA. No. _____

PICKED UP: ___/___/___ TIME _____ ☐ A. M. ☐ P. M.

SCH. No. _____ BY _____

DELIVERED: ___/___/___ TIME _____ ☐ A. M. ☐ P. M.

SCH. No. _____ BY _____

SOUTHERN CALIFORNIA GAS CO.—1525

This shows the receipt form (6"x4") which the Southern California Gas Co. has designed for keeping check on special delivery mail items handled by its private courier service. By means of this form, which is made out in duplicate, it is possible to make a complete check-back and determine time of pick-up and delivery of an item, the name of the courier and other relevant data. Responsibility for any slip-up therefore can readily be placed.

Novel Sorting Rack

The central mail bureau occupies a spacious 30 x 30 foot office in the Flower Street building in Los Angeles, conveniently adjacent to the offices of Assistant Secretary McGuire.

A specially designed mail rack for expediting the sorting and routing of mail has been installed. The sorting setup consists of four racks, each 3½ feet wide by 4 feet high, which rest in a semi-circular pattern on a base raised some 18 inches above the floor. The front of the base is indented like the "slot" in the copy desk of a newspaper editorial room. The racks contain 180 bins. Feature of the bin design is their removable partitions, fitted in slots, which permit any one bin to be widened or reduced in size to accommodate the size of the average mail for any one department. Each department or mail location in the central division has assigned to it a bin or bins, with code number attached for convenient reading.

As mail arrives in the central bureau from the various departments, it is quickly sorted into the proper bins by girl sorters. If the volume of mail from one department is heavy, it is usually brought into the mail room in large folio size folders on the exterior of which is affixed a label bearing the sender's name and code number and addressee's name and code number. Each large folder holding several items consigned from one department to another is similarly marked with a label. Packages too large to fit in the bins are placed on a shelf beneath the racks.

Mail Routing Forms

The mail room supervisor prepares daily routing sheets and delivery schedules which are to be followed by the couriers. The schedules are prepared after the supervisor has checked against the volume of mail on deposit in the sorting racks and the packages stored on the shelf below the racks.

The couriers travel about town in automobiles. The trip schedule is prepared in sufficient detail to outline a courier's movements on a trip without much chance of a mistake. A sample schedule reads as follows:

Leave Flower Street 5.00
Leave Santa Fe Ave. 5.10
Leave Altadena 5.40
Leave Pasadena 5.55
Arrive Flower Street 6.35

Couriers are also supplied with typewritten instruction sheets detailing their duties on a particular trip; such as:

Leave mail sack from Flower St.
Leave Liberty file.
Pick up mail from Santa Fe Ave.
Pick up meter book from Altadena.
Pick up pictures from Pasadena

A set of master instructions has also been prepared which outlines general duties and procedures under

special circumstances. Maps of buildings at which mail deliveries and pickups are made have been drawn to assist the couriers in locating entrances which are open after regular business hours, and in finding persons to whom deliveries are to be made.

The mail supervisor prepares a daily "Dispatcher's Sheet." On this form information is inserted which provides the supervisor with an accurate check on the time when a courier leaves and when he should arrive at certain points on his trip. It also enables the supervisor to determine to a fairly accurate degree where a courier should be at a given time. This enables the supervisor in emergencies to phone ahead to the next scheduled stop and intercept the courier with supplementary instructions for a special pickup which had not been included on his original schedule. This phase of the plan has been particularly effective in speeding up special deliveries.

Records of Deliveries

The mail bureau supervisor also keeps a record of "Work to be Done." This is kept on a mimeographed form 8½ x 11 inches in size. The sheet is ruled into columns which provide a space for each day in the month. The spaces are headed "Specials: Description," and "Work Notes." A record for each month of the special deliveries completed for each department is kept on forms of this type.

The Southern California Gas Co. maintains courier service to all points in its central division. The division includes metropolitan Los Angeles, Pasadena, Hollywood, Beverly Hills, Inglewood, Huntington Park and Alhambra. The couriers also serve Compton and Glendale. Mail for the northern and southern division is taken to Glendale and Compton for distribution to the division. All other mail consigned from the central division to all other divisions—except bulky packages, which go by company freight truck — is usually sent by U. S. Mail.

Code Number Directory

Under preparation is a directory which will list the code addresses and pickup points of a selected portion of the company's personnel. By reference to this directory, the code number of any department and most of the persons receiving mail will quickly be ascertainable in order to insert it on the messenger service envelopes.

Col. W. F. Rockwell
President

A. G. A. E. M. Annual Meeting

H. Leigh Whitelaw
Managing Director

AS REPORTED in July issue of the JOURNAL, the entire slate of officers of the A.G.A.E.M. was re-elected at its Annual Meeting held in New York on June 29th. They consist of Col. W. F. Rockwell, President, Lyle Harvey, First Vice President, D. P. O'Keefe, second Vice President and John Van Norden, Treasurer.

In accepting re-election Col. Rockwell said "In my address today, I wish to emphasize that time may be running short, even though the war is not won this year or next, to unify our industry, to consolidate our post-war planning, which must include the reemployment of labor quickly, and to at least take the initial steps to explore all the new materials and tools that the technology of this war has developed.

"The time is not too short to strengthen the organization of the divisions in your Association, and plan the activities that will make it possible to derive the greatest benefits through a virile and active membership."

The subject of research also was freely discussed. This referred particularly to the type and manner of research to be undertaken by the A.G.A. Laboratory. Some utilities as represented by A.G.A. felt that there is essential research on domestic gas appliances that should be undertaken by the A.G.A. Laboratory. However, before this could be undertaken, a new understanding with the manufacturers would be necessary due to the 1936 resolution of the joint committee on laboratory policies, limiting the research activities of the laboratory. A Committee was appointed to study the procedure of the A.G.A. and to report on the individual projects, and to consider them on the merits of each, and their necessity during the war emergency.

The Post-War Planning Committee gave tentative endorsement to the publicity plan being worked out by the National Warm Air Furnace Association.

Two propositions were passed by the Board of Directors to be presented to the members for a vote. One, that the Chairman of the CP gas range group shall automatically become a member of the board of directors. Two, that a new accounting and credit section be formed, the chairman also to be a member of the board.

Meter Accuracy Records And Their Analysis

By
Harry A. Faull
Southern Counties Gas Company
Los Angeles, California

THE MINIMUM requirements in the matter of meter records is usually dictated by Public Service or Railroad Commission rule; any extension of the minimum requirement is at the discretion of the utility. In California, the Railroad Commission's General Order 58-A, item 29 (a) (b)&(c), prevails, and its terms are:

29. Records of Meters and Meter Tests.

(a) A complete record of the tests made under these rules shall be kept by each gas utility. The record so kept shall contain complete information concerning each test, including the date when, and the place where the test was made, the name of the inspector conducting the test, the result of the test, and such other information as may be required by these rules, or as the Commission may from time time to time direct, and such additional information as the utility making the test may deem desirable.

(b) Whenever any service meter is tested, the original test record shall be preserved, including the information necessary for identifying the meter, the reason for making the test, the reading of the meter upon removal from service, together with all data taken at the time of the test in sufficiently complete form to permit the convenient checking of the methods employed and the results obtained. These records shall be preserved for a period of not less than two (2) calendar years.

(c) A record shall be kept, numerically arranged by meter numbers, indicating for each meter owned or used by a gas utility, its type, size and date purchased, together with the dates and locations of each installation, the date and result of each test, and date and character of all repairs made. These records shall be preserved for a period of one year after the meter is sold, dismantled or destroyed.

29 (a) and (b) may be complied with by use of, and preservation of for two years, a form similar to the illustration Figure 1. This form serves as a record for four classes of tests:

1) Receiving Test, which class is further broken down to "why tested"
   a) Demand
   b) Complaint
   c) Routine
   d) G.O. 58

   This is the test given every meter removed from service.
2) Final Test, which is the test given every repaired meter before installation.
3) Installation Test, which is the test given new meters before installation.
4) Corrected Installation Test, which is the final test given a new meter that failed to pass the Installation Test within prescribed limits.

Meter History Record

The test results tabulated on this form are transcribed to a form illustrated in Figures 2 and 3. This form, which may be called a "Meter History Card," satisfies requirement 29 (c) of the Commission order, and goes somewhat beyond in that it is designed to provide for an easy means of selection of meters from the card file by age. For example, the meter written up in Figure 2 will be seven years in service, hence ready for removal under terms of G. O. 58-A, in the year 1949.

One requirement of 29 (c) is that the type and size of meter be part of the record, and it is not apparent that Figures 2 or 3 comply with this requirement. However, this requirement is satisfied by a code number, prefix to the meter number. The particular meter, for which Figures 2 and 3 are the history card, is a 5 light Pacific tin meter: Code number 153. Code 511 is a 5 lt. Metric Regular; 502CB is a 1A Sprague Curb; 538 is a #O Emco, etc. There are several advantages attaching to this code system that will not be enumerated here.

The two forms, Figure 1 and Figures 2 and 3, meet the requirements of the regulatory body, and consti-

Figure 1

SHEET NO. 1 — SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA
METERS TESTED AND REPAIRED AT Santa Ana — Date 9-24 19 43a
☒ RECEIVING TEST ☐ FINAL TEST ☐ INSTALLATION TEST ☐ CORRECTED INSTALLATION TEST

METER NUMBER	INDEX READING	AIR PASSED BY PROVER	RESULT OF TESTS — TEST—PER CENT				Type of	Why Tested	Order Number	Repair Made
			OPEN	OPEN	CHECK	CHECK				Repaired By
153-674	123	20 199	0.0		0.5	0.5	68	69	X	D-1384
-985	742	209 20	4.3		0.0	0.0	X	X	X	1396
-3695	890	201 20	0.5		0.0	0.0	X	X	X	1393
160-1392	139	206 204	2.9		2.0	2.0	X	X	X	1357
786	372	20 195	0.0		2.6	2.6	69	X	X	1375
-951	649	201 196	6.5		2.0	2.0	X	X	X	1369
502-1465	975	198 193	1.0		3.6	3.6	X	X	X	1371
502CB-676	379	197 20	0.5		0.0	0.0	X	X	X	1385
859	641	196 195	2.0		2.6	2.6	X	X	X	1356
1495	175	200 194	1.0		2.1	3.1	X	X	X	1372
536	139	201 20	0.5		0.0	0.0	X	X	X	1373
5H-787	4164	195 20	2.6		0.0	0.0	X	X	X	1374
792	2995	203 203	1.5		1.5	1.5	X	X	X	1341
5946	7854	204 204	2.0		2.9	2.9	X	X	X	1395
8951	7196	202 201	1.0		0.5	0.5	X	X	X	1370

Tested by V. Hankle — Date 9-25-43 — E. Henry Foreman

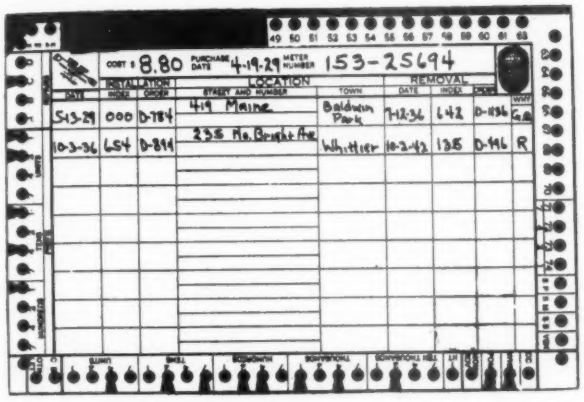


Figure 2

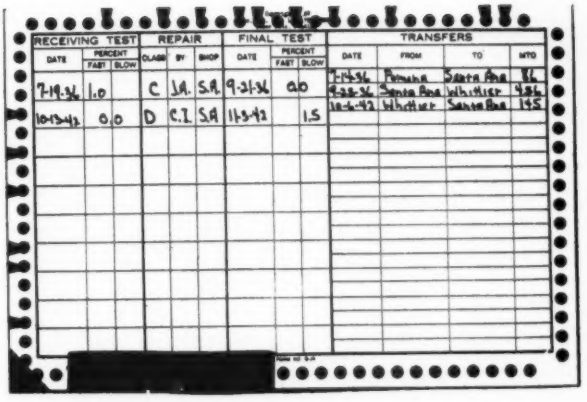


Figure 3

tute source data for summation, frequency distribution and analysis. As it stands, information such as appears in Figure 1, is just an agglomeration of unorganized data that has no recognizable form, or pattern.

To bring order to such a tabulation, certain arbitrary, or logical, groupings must be made. In the case of meter accuracy records, the large group would be all meters tested in the calendar year; within this large group, a breakdown might be made between makes, such as Sprague, Metric, Tin, and Emco. These subdivisions would of course vary from one company to another depending on the company's meter properties.

Any type meter that has peculiar features of construction, and is owned in considerable number, should be set up in a group of its own. Since ambient temperatures would be quite different as between meters located above ground in the weather and those located in curb vaults, and since this may have some effect on accuracy tendencies, a separate grouping could be made within the make (manufacturer) for "curb type" and "regular." In short, a classification should be set up for any considerable number of the "population" that have common design features, or are subjected to common operating conditions, that bear on accuracy. For our purpose, we shall break down the large group of meters, into makes A, B, C, and D. This separation can easily be made by the code number prefixing the meter number on the meter history card, and will give four piles of cards: one for make A, one for make B, etc.

Length of Service

Since meter accuracy is some function of time, another logical breakdown, within the make, is age, usually designated "Years in Service," and the range comprises nine intervals: Less than 1 year, 1, 2, 3, 4, 5, 6, 7, Over 7. This separation is made by running a sorting needle through the age punching across the top of the card. Assuming there is some representation in each age group, we now have nine groups of meters in each of four makes.

Meter accuracy involves a measurable quantity (percent error), hence the data can be quantitatively analyzed and presented as a frequency distribution where the class interval is some range of meter error. The class interval may be a constant, or may get larger the farther away the interval moves from zero, as does the distribution illustrated in Figure 4.

The meter history cards are separated into groups that are defined by the percent error limits heading the columns of Figure 4, and the cards making up each group are counted. The number of cards (each representing a meter) in each group is entered in the proper column on the form, Figure 4.

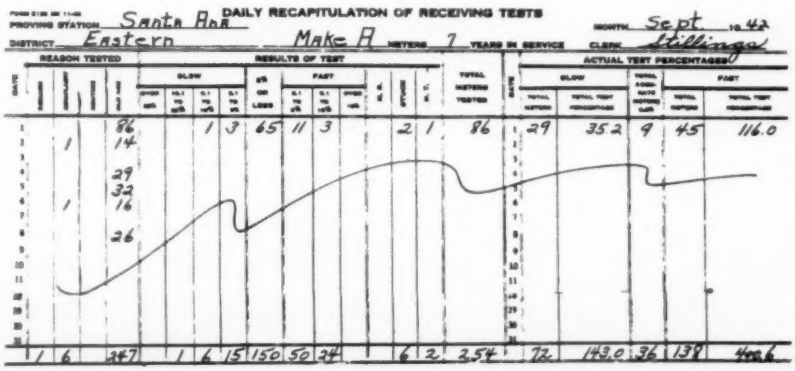
The form of the meter history card does not provide for any quick way of making this separation into accuracy interval groups; it is done by individual card inspection.

When the entries are made in the columns of Figure 4, it will be noted that they present some symmetry of occurrence, with the axis usually falling in the "2% or less" interval. If this data were presented in form of a histogram, as measurable quantities often are, the greatest area would occur in this interval. As is the case in any frequency distribution, the pattern of symmetry is better defined as more samples (individual meters) are involved.

Separate Records

One sheet (of Figure 4) is used for every make of meter (or for every common group) and for every age group within the make group, and the column footings, representing a month's tests, are transcribed to a monthly recapitulation sheet, as Figure 5. These sheets, Figure 5, now comprise the record, arranged in some order, of the month's tests. At the year's end, the monthly records are re-capped and combined into a single report, as illustrated in Figure 6, which is the official company report to the Railroad Commission. This report, while in an orderly form, is not suitable as data from which to draw conclusions because of its heterogeneity; it includes all makes and types of meters, and many other variables besides time and percent error.

Figure 4



MONTHLY RECAPITULATION OF RECEIVING TESTS

District Eastern — Month Ending Sept 30 1942 — Province Station Santa Ana — Class Stillings

29,854 Total Active Meters

Years in Service	Reason Tested: Regular	Reason Tested: Complaint	Results of Tests: Fast	Results of Tests: Slow	Total Meters Tested	Actual Test Percentages: Slow	Actual Test Percentages: Fast
Make of Meters — Make A							
Less 1		1		1	1	2.0	
1		10	2	8	10	16.8	2 2.0
2	1	8		5 2	9	4.5	4 9.7
3		4	1	1 1	4	2.9	2 7.9
4	1	6		2 3 1	7	1 5	17.3
5		4 117	1	46 57 15 1	121	4 5.9	10 106 348.7
6		5 110	1	32 56 23 1 1	115	3 5.4	3 107 388.6
7	1 6	247	1 6 15	150 50 24 6 2	254	72 143.0	36 138 400.6
Over 7							
Total	3 6	38 474	1 6 20	244 169 64 2 1 7 7	521	92 180.5	50 364 1174.8
Make of Meters — Make B							
Less 1		1		1	1	1.5	
1		11	1	9 1	11	8 14.4	2
2		10	1	8 1	10	4 7.4	2 3 3.5
3		9	1	7 1	9	3 4.4	3 3 6.1
4		8		3 4 1	8	1 6 17.6	
5		2		1 1	2	1 0.5	1 4.2
6		9 1		7 2 1	10	1 2.0	9 21.6
7		18		7 9 1 1	18	1 1.0	2 14 42.8
Over 7							
Total		50 19	3	43 17 2 1 3	69	17 31.2	10 36 95.8
Grand Total							

Figure 5

Intelligent analysis of meter accuracy data, and conclusions drawn therefrom, is of great importance, because the conclusions, when verified, will determine the repair procedures, outgoing, or final, test settings, meter purchase policy, in short, the company's whole meter policy.

In the analysis of a report such as Figure 6, it is convenient to deal with four groups:

1) O.K. meters—meters testing 2.0% or less in error.
2) Fast meters—meters testing more than 2.0% fast.
3) Slow meters—meters testing more than 2.0% slow.
4) D. R. (don't register) meters—meters that could not be tested either because they are stuck, will pass gas but will not register, or are otherwise damaged.

Also, it is usually more meaningful to deal in ratios, or percentages, rather than in absolute units. Putting the "Total" figures in Figure 6 to this analysis, we find the following:

RECORD OF METER TESTS FOR THE YEAR 1942 (GAS)

Years in Service	No. of Meters Tested	Do not Pass Gas	Do not Register	Slow: Over 25%	Slow: 10.1 to 25%	Slow: 5.1 to 10%	Slow: 2.1 to 5%	Between 2% slow and 2% fast	Fast: 2.1 to 5%	Fast: 5.1 to 10%	Fast: Over 10%	Total Active Meters Dec. 31st.
Less than one year	462	16	18		1	2	57	336	11			
1	1,753	25	31	1	2	15	159	1,426	51	2	2	
2	1,212	33	37		2	7	97	947	41	3		
3	1,153	16	29		3	7	75	863	111	16	1	
4	1,459	27	15		2	29	108	898	306	39	1	
5	3,697	18	25		2	22	112	2,057	1,164	255	6	
6	4,103	16	6		2	4	52	2,145	1,430	401	7	
7	17,418	42	21	1	20	91	510	10,599	5,071	1,003	27	
Over 7	92	1				2	5	56	24	3	1	
Totals	31,349*	193	182	2	34	179	1,185	19,327	8,209	1,732	45	222,527

*Includes 261 "No Test" Meters, not included in the tabulation to the right of this column. Average Age 6.7 years

7GN

Figure 6

Making this analysis, the following may be revealed:

Aside from being thankful for meters falling into the O.K. column, not much more attention is paid them. If the Fasts and Slows can be taken care of, one's troubles are insignificant.

Analysis of Tables

Table 2 reveals that of the 9986 fast meters, Make A contributed 58%, Make B 9%, Make C 20%, and Make D 13%. Now, it must be pointed out that, since the denominator for these percentages is the number of fast meters tested in year 1942, Make A is not necessarily the worst make of meter of the four, when the criterion is propensity to run fast, for when the denominator is total meters of the particular make tested, it is discovered that Make D is much worse. Also, it is entirely possible that Make D represents 40% of the total connected population, while Make A represents only 10%, even though in this particular year Make A went through the shop in much greater number. This latter possibility must be considered when appraising a company's whole meter accuracy situation based on one particular year's test results.

For purpose of our analysis, we shall assume that the numbers in which Makes A, B, C, and D went through the shop in 1942 are indices of the weight they contribute to the entire population, and, in keeping with the old democratic tenet of "The greatest good of the greatest number," we shall attempt to analyze Make A and see if the reason for the high percentage of fast meters can be pointed up.

This analysis of Make A involves breaking the Make group into some smaller units, or groups. Just as the breakdown of the large group (Figure 6) was to groups having some common features, so the breakdown of Make A will be to groups wherein the meters comprising the group have something in common. A separation that might logically come to mind would be to class of repair; i.e., the class, or extent, of repair given the meter last time in the shop. This separation may reveal that meters receiving more extensive repairs hold their accuracy better than meters receiving only minor adjustments; or the reverse may be revealed.

TABLE 1

	Total Meters Tested All Ages (Less N.T. Meters)	*O.K.*	*Fast*	*Slow*	*D.R.*
	31,088	19327	9986	1400	375
Percentages	100	62.2	32.1	4.5	1.2

Since the report, Figure 6, was the synthesis of certain group totals, an easy and obvious breakdown would be to the groups that made up the whole, viz. Makes A, B, C, and D.

TABLE 2 O.K. Meters

	Total	*Make A*	*Make B*	*Make C*	*Make D*
Number	19,327	8537	3965	5821	1004
Percent	100	45.0	20.0	30.0	5.0
		Fast Meters			
Number	9,986	5780	891	2025	1290
Percent	100	58.0	9.0	20.0	13.0
		Slow Meters			
Number	1,400	762	30	34	574
Percent	100	55.0	2.0	2.0	41.0
		D.R. Meters			
Number	375	152	102	121	——
Percent	100	41.0	27.0	32.0	——
Grand Totals	31,088	15,231	4988	8001	2868

Meter Repairs

Meter repairs are usually of four degrees, or classes, and designated 1, 2, 3, 4, or A, B, C, D, or similarly identified, and the designations have the following approximate meanings around the country:

A—Adjust only

B—Grind valves, repack stuffing boxes, replace worn parts above the table (diaphragms O.K.)

C—Same as B; add, diaphragm reconditioned

D—Same as B; add, new diaphragms installed

By Commission rule, the class of repair must be written on the meter history card, and space is provided on the Figure 3 side of the card for compliance with this requirement. In addition, the card is punched (in the upper left corner of Figure 2) for class of repair, making separation by class of repair a simple exercise with a sorting needle.

It is not necessary that the entire 15,231 meters in Make A that were tested in 1942 be involved in this separation. It is only necessary that enough samples be taken so that they are representative of the whole. A good simple working procedure is to start the selection of samples (Note: this must be random, not discreet, selection), and, at intervals, separate them into O.K., Fast, Slow, and D.R. and compute percentages. Depending on the number of samples per interval, it will be noted that at the end of the first few intervals the percentages will vary considerably, but gradually some form is taken that does not vary with subsequent sampling. When this point is reached, a sufficient number of samples have been taken.

The results of this breakdown of Make A may be as tabulated in Table 3.

The reliability of the sampling can be checked by weighting the percentages O.K., Fast, Slow, and D.R. within each Class of Repair group, by the percentage that each class of repair is of total of the Make tested, and comparing the results with Table 2. If the sampling is adequate, there will be close agreement.

Table 3 reveals that Class D repair is by far the most offensive in matter of error in the fast direction, and the investigation from now on is in the realm of physics, mechanics, and chemistry, and is beyond the scope of this paper.

Gas conditions affect meter accuracy in varying degrees and directions, and if this is suspect, the breakdown or separation will be to the end of separating meter measuring one kind of gas from those measuring another. This is usually a geographical matter; i.e., the gas suspected of contributing to meter error is usually confined to a particular distribution system, or portion thereof. Investigations of this sort of situation are somewhat different from the analysis that resulted in Table 3, in that the latter was an unbiased search for a cause, whereas here we start with a conclusion (at least a suspicion) and try, by methods of analysis, to test it. The latter is a perfectly legitimate exercise provided scientific method, free from bias, is used.

Effect of Gas Quality

In this case we are testing the effects of gas quality on meter accuracy. Therefore, all other variables, such as time, make of meter, class of repair, etc., should be kept as nearly constant as possible. The meter selected for the test may be a 5 1t. Make A meter that received a C repair and subsequently was in service 7 years in the area to which the test is to be applied. The amount of change in meter proof may be the index by which the effect of gas quality on meter accuracy is to be judged, and the classes, or groups, to be set up would require a look at the frequency distribution for the total sample. For example: assume that 70% of the samples speeded up by amounts varying from 0 to and including 4.0%. Then two groups might be selected: those that speeded up from 0 to 1.0% inclusive, and those that speeded up from 3.0 to 4.0% inclusive. Using the extremes of this area of distribution and leaving a gap in the middle will tend to bring the picture into sharper focus. Now a color will be identified with, or assigned to, each group. A meter in the 0 to 1.0 group will be represented by a blue dot, and a meter in the 3.0 to 4.0 group will be represented by a red dot. These dots will be made on a map of the area, at the location where the meter was in service. As is the case in selecting samples for any purpose, enough have been selected when a pattern takes form and is not altered materially by further sampling.

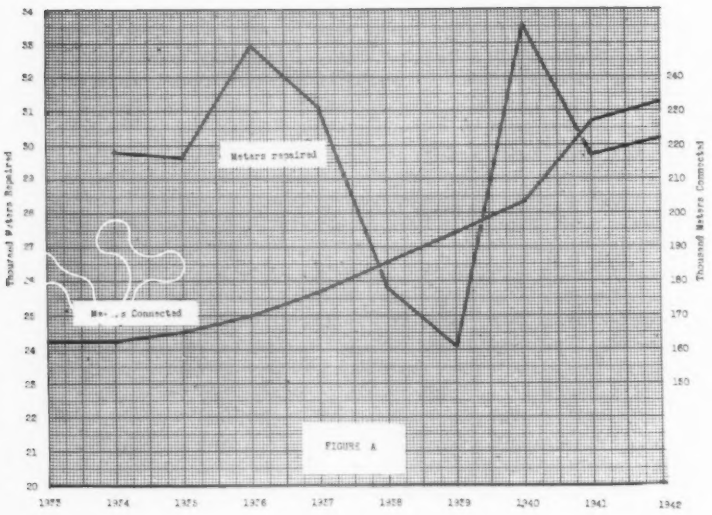
This sort of study has long been used and is very effective. However, the investigator must be aware that it assumes that the particular meter used in the test is generally dispersed throughout the areas under test. It could well be that very few "red" meters fell in "area A" simply because there were very few 5 1t. Make A meters in the area.

Proof Change

Another worthwhile search to make of meter accuracy records is the determination of degree and direction of proof change by class of repair. It has been disclosed in more than one instance that meters changing most in proof (from final test after repair to receiving test after service life) were those that had been repaired most extensively. The result of this sort of investigation may be, and has been, the adoption of final test settings for certain classes of repair that anticipate cer-

TABLE 3

Class of Repair	*Total Samples*	*O.K.*		*Fast*		*Slow*		*D.R*	
		No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
A	150	104	69.1	22	14.9	24	16.0	—	—
B	150	104	69.1	12	7.8	34	23.1	—	—
C	250	207	82.8	31	12.4	11	4.4	1	.4
D	100	46	46.0	48	48.0	6	6.0	—	—



tain proof changes, and so selected as to bring the meter into the "2.0% or Less" column on receiving test. The amount of proof change that may be provided for by starting the meter off in error, is a matter of opinion, but it should be small. The line of attack should be mechanical: repair procedures, parts replacement policies, etc., should be planned with a view to keeping the change in proof to the minimum.

The error that inheres in the use of "average" figures, or "arithmetic means," in the meter accuracy situation should be pointed out here. Amazingly enough, it has been seriously put forth that a company's meter accuracy situation was good because the slow meters offset the fast meters; their algebraic sum was 0.0, therefore everything was all right. The purpose of meter repairing should be to the end that the meter register with the highest degree of accuracy possible, throughout its service life. Meter accuracy represented by the frequency distribution curve Figure 7A is much better than that represented by Figure 7B, even though the mean in Figure 7B is closer to 0.0 than is the mean in Figure 7A. The goal should be to get the greatest possible frequency of occurrence in the narrowest possible range, and no compromise should be made with cancelling errors.

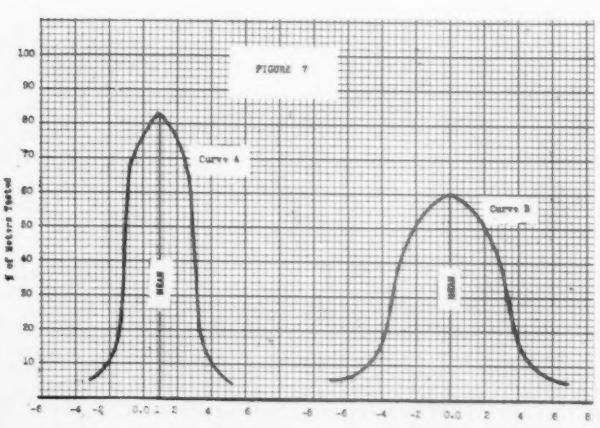
Presentation in Graphs

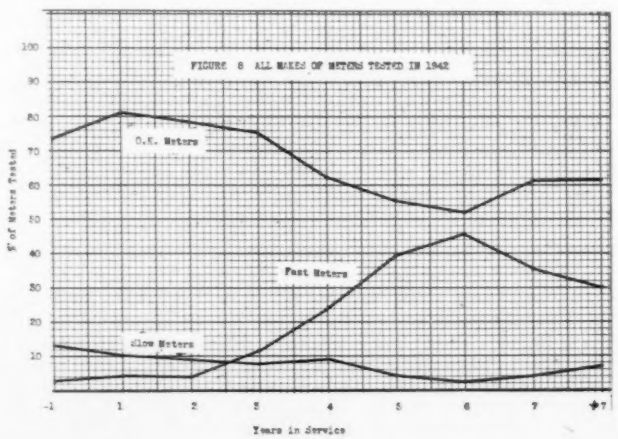
The analyses discussed thus far have not given much consideration to time as a factor. Data tabulated as in Figures 5 and 6 lends itself well to graphic presentation with time as a variable. For example, Figure 8 is a graphic presentation of the data presented in tabular form in Figure 6, with the classifications O.K., Fast, and Slow expressed as percentages of total meters tested in the particular year.

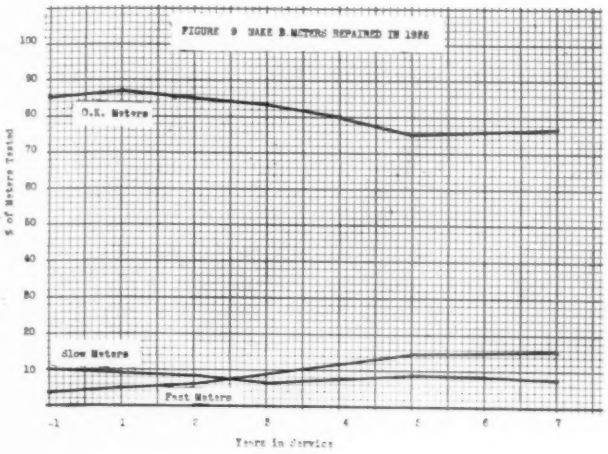
The plotting of points on a coordinate system implies that there are only two variables involved: that the point expresses a relation between its value on the X axis and its value on the Y axis, to the exclusion of other considerations. In the case of data as in Figure 6, we have seen that there are other variables: make of meter, and class of repair within the make, to mention only two. Outgoing, or final, proof settings have a very important effect on incoming meter proof. It is very probable that the makes of meters making up a particular age group will not be in the same proportion from year to year. As the result of all these factors, the graph of the data will probably be a quite uneven line, as Figure 8 is, and, while this is an authentic picture of the results of receiving tests in the year 1942, and to that extent of some value, it is of no value in determination of, and projection of, a trend, which is a very useful function of graphic presentation.

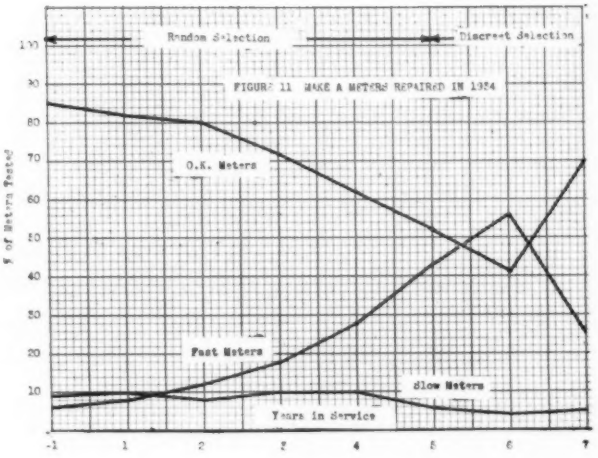
To get better control of the sample, it is desirable to break down the data, as was done when we were considering tabular presentation, to make of meter. Also, it is advisable to omit D. R. meters and express the O.K. Fast and Slow as percentages of the sum of these three classifications only. The D. R. meters bear very little, if any, relationship to the number of meters of a particular age group, and make group, that come in for repair in any year. If they are to be presented as a function of anything, it would more properly be the number of meters of that group to which they belong, that were repaired in a particular year. Inclusion of D.R. meters in the graphic presentation can seriously distort the trend lines on the other meters, particularly in the earlier years, when total meters involved are small and incidence of D. R. meters is high.

A further rearrangement of the data is to plot on one graph, only meters repaired in one year. For example, if it is desired to graphically present the accuracy record of Make A meters repaired in 1935, the first points (O.K., Fast, and Slow) plotted would be the "Less than 1 Year" meters from the 1935 report; the next set of points would be the 1 year meters from the 1936 report, etc. The reason that this arrange-



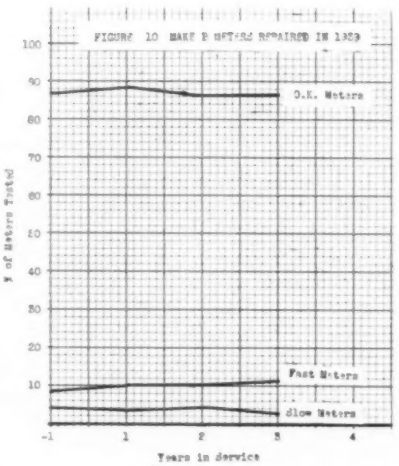






ment is desirable is because changes in repair procedure from one year to another, or changes in outgoing proof settings, will not be reflected by violent fluctuations in the trend lines. A particular group of meters is followed throughout its service life and, usually, smooth trend lines result as figures 9 and 10. These trend lines, after they have enough form to be considered "trends," can be projected, and, if the numbers of the several groups of meters that are expected to come through the shop next year can be predicted with some accuracy, a reasonable forecast can be made of what next year's total meter accuracy will be.

A trend line can be seriously upset by biased or discreet removal of meters. Figure 11 illustrates this well. This incidentally, is a graph of the history of "Class of '34" Make A meters that were found by analysis to be fast in a certain class of repair. In an effort to improve the meter accuracy situation, meters in this Make group which received that class of repair were removed in their sixth year; this left the less offensive classes of repair in service, to be removed in the seventh year, and the graph



well illustrates what can happen when selection is discreet rather than random.

Repair Log

Adjunct to meter accuracy records expressed in percentages of error, another useful record is a chronological record of repair procedures, outgoing proof settings, changed gas conditions, and any other factors that might be expected to influence meter accuracy. This sort of record may be called a "Log." As meter men are well aware, if the laymen are not, the company's total meter accuracy record in a particular year is several years displaced in time from the controllable factors that make the record, and trying to rationalize a bad picture often involves "asking Joe" if he can recall what the repair procedure was 6 or 7 years ago that might be the cause. Such an entry in the log, under year 1940, as: "Removed 2500 Make A meters that received Class D repair in 1934," would explain the fluctuations of Figure 11.

In conclusion, the analysis of the large unorganized mass of meter accuracy data simply involves subdivision and re-subdivision into groups having some common feature until deviation from the norm becomes very marked. The subdivision wherein this occurs is usually the answer to and the end of the investigation in its statistical aspect.

Presented for discussion at the Measurement Committee Meeting, Pacific Coast Gas Association, Technical Section, May 19th and 20th, 1943, Los Angeles.

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Gas Water Heater Ordinance Requires A. S. A. Approval in Los Angeles

IN A MOVE long advocated by the Pacific Coast Gas Association, Southern California Gas Co., Institute of Gas Heating Industries and others interested in development of the gas industry in Southern California, the Los Angeles city council has adopted a new ordinance providing that only A.S.A. approved and certified gas water heaters may be installed in the city of Los Angeles.

Ordinance No. 86,671, which became effective July 22, amends the municipal building code in respect to gas water heater installations in two important points:

1) It provides that only such gas water heaters may be installed which conform to the approved requirements of the American Standards Association Z 21.10-1935, -1937, -1938 or -1939 and which must bear an approved label certifying such conformance.

2) It liberalizes the regulations pertaining to vents by amending the municipal code requirements for a separate vent for each heater to permit not more than four gas water heaters to be connected to a common vent.

The measure also provides that seamless metal tubing connectors for gas appliances must conform to performance requirements of Part IV of the "Listing Requirements for Semi-rigid Gas Appliances Tubings and Fittings of the A.S.A., Serial No. ASA Z21.24-1941.

Under the new ordinance, four water heaters may be connected to a common vent if all the water heaters so connected are located in the same story of the building. Vent manifolds are made mandatory if more than three feet of vent connection is required to connect a heater to a common vent. The length of the vent manifold may not be greater than the height of the vertical vent to which it connects and may not exceed 15 feet. The connection between a heater and a vent manifold may not be more than three feet in length.

The ordinance specifies that the size of the common vent and the vent manifold shall be not less than the values set forth in the adjoining table:

No. of Gas Water Heaters	*Maximum Gas Input Rating of all Gas Water Heaters*	*Minimum Internal Diameter of Vent and Vent Manifold*
2 or 3	75,000 B.T.U.	5 inch
4	100,000 "	6 "
4	200,000 "	7 "
4	300,000 "	8 "

The measure also specifies the elevation of vent connections, the size of openings in vent connections, and when square or rectagular vents may be used.

The code change for allowing more than one heater to be connected to a common vent was urged by architectural and building contracting groups who long have been opposed to the one-heater-to-a-vent rule on the ground that it was unnecessary and that the numerous vents in some cases tended to weaken a building.

The new ordinance also embodies revised provisions pertaining to underground piping, specifying that ferrous gas piping laid underground or embedded in concrete must be protected against corrosion by a mastic bituminous coating at least 3/8ths inch thick.

The provision that every gas water heater installed after the effective date of the ordinance must be an approved type has been hailed with satisfaction by leaders of the gas industry in Los Angeles, where theretofore practically any type of heat could be installed with impunity.

The ordinance also tightens regulations pertaining to gas piping inspection by placing the responsibiilty for such supervision directly on the Department of Building and Safety, which will handle the inspections through its plumbing inspection division. The ordinance prescribes that gas piping shall be subject to a first or rough inspection before the piping is concealed, and a final inspection. In the final inspection the piping system, after capping, must be able to withstand for at least five minutes an air pressure of 10 lb. p.s.i., or a pressure twice the maximum gas pressure, whichever is greater. In cases where the piping is not concealed, the ordinance permits first and final inspections to be made at the same time.

Another provision specifies that every gas water heater must be installed in a space easily accessible for adjustment and repair. An interpretation of this clause issued July 22 by G. E. Morris, superintendent of building, and A. R. Lott, chief plumbing inspector, states that no gas water heater may be installed where the burner, pilot or water temperature control would be more than six feet above the floor level of a room or compartment in which the heater is installed, and that controls must be readily accessible at all times.

Industry and municipal representatives alike view the new ordinance as advantageous in that it condenses into one compact and specific ordinance the various scattered regulations pertaining to gas water heater installations, has added several much needed provisions, and has strengthened supervisory regulations over heater installations.

Existing provisions of the municipal building code pertaining to fire hazard phases of gas water heaters, location of meters, risers and heaters, have been incorporated substantially unchanged in the new gas water heater ordinance.

Gas Conservation Campaign of American Gas Assn.

A new gas conservation campaign to be used by manufactured gas companies to support the Government's program to conserve vital fuels for war purposes has been developed by the Association's Publicity & Advertising Committee under the direction of the Committee on War Activities.

This new educational program was suggested by J. A. Krug, Director of the Office of War Utilities, W.P.B., in a letter to E. R. Acker, Chairman of the Association's Committee on War Activities. In his letter Mr. Krug complimented the gas industry on its previous conservation programs and requested that the new one to be developed for the use of manufactured gas companies be put into effect promptly.

The campaign has been reviewed by representatives of the Office of War Utilities and has met with their approval. It consists of twelve newspaper ads and a bill stuffer. Mats reproducing all of the material are available from Association Headquarters, New York.

RUBBER TREE—*American-grown*

To the Graduate of '03 such words as butadiene, styrene and isoprene were unknown entities. Today they are firmly anchored in the lexicon of chemistry. America is growing hardy rubber trees synthetically, nurtured from oil, coal, gas, grain, guayule. In this age of miracles invention comes to necessity's aid. Laboratory curiosities bloom forth into commercial actualities. America *will* have rubber—*lots of it!*

Nordstrom Lubricated Valves are in the very vortex of synthetic rubber production. They regulate the controlled flow on vitally important lines—those handling high temperature hydrocarbons and other corrosion-forming elements as well as highly volatile and penetrating liquids. Nordstrom Valves, due to their patented lubrication system, are free from galling or sticking. They are ready for any emergency, with quick, sure quarter-turn operation providing a positive shut-off.

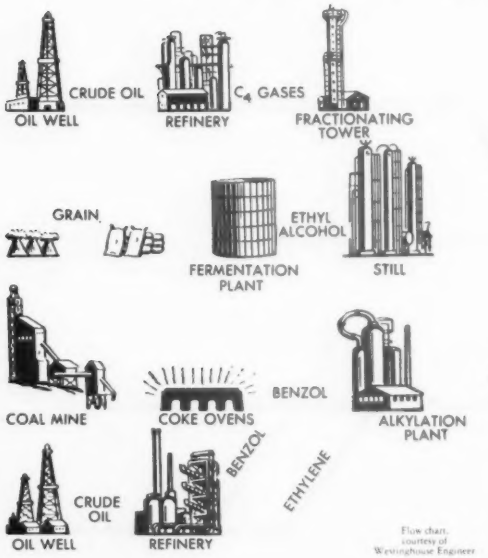
HAVE YOU EVER SEEN A MOLECULE?
The fantastic structures of balls which give symbolism to atomic masses are chemistry's expression for unseen objects. Yet in their synthesis they impose new problems for valves never before imagined. Nordstrom Valve engineering has become, by necessity, a combined science, involving structural design, metallurgical development, and chemical research. But the reward for this intensified progress is most gratifying. The eager acceptance of Nordstrom Valves in practically every synthetic rubber plant in America and the highly satisfactory service these valves are rendering, give us inspiration to continue the labors of research. By giving outstanding service in the most difficult of applications, it is a certainty that Nordstrom Valves will best serve *your* needs for less severe requirements on your vital flow lines. *It really takes a Nordstrom Lubricated Plug Valve to give all-around, good service.*

NORDSTROM VALVES

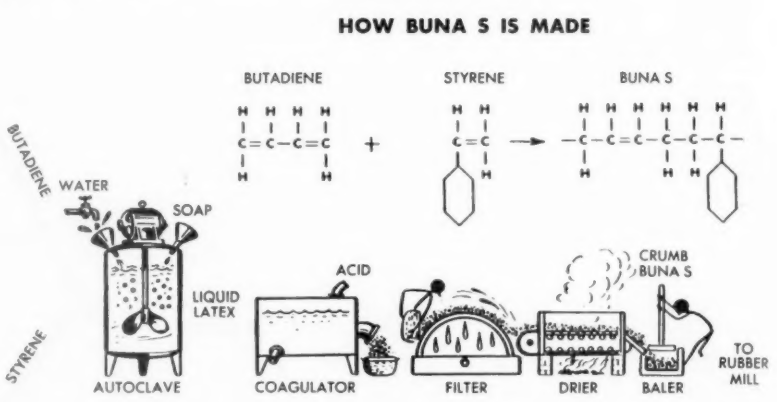
FOR ALL SYNTHETIC PROCESSES

ALL ALONG THE FLOW-LINE *of synthetic rubber production*

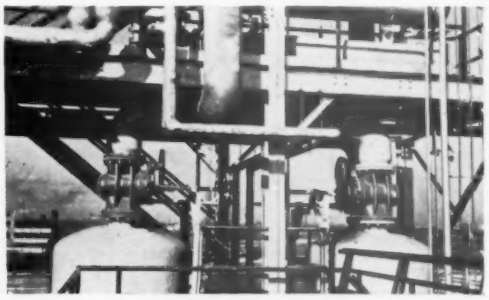
NORDSTROM VALVES *are the vital controls*



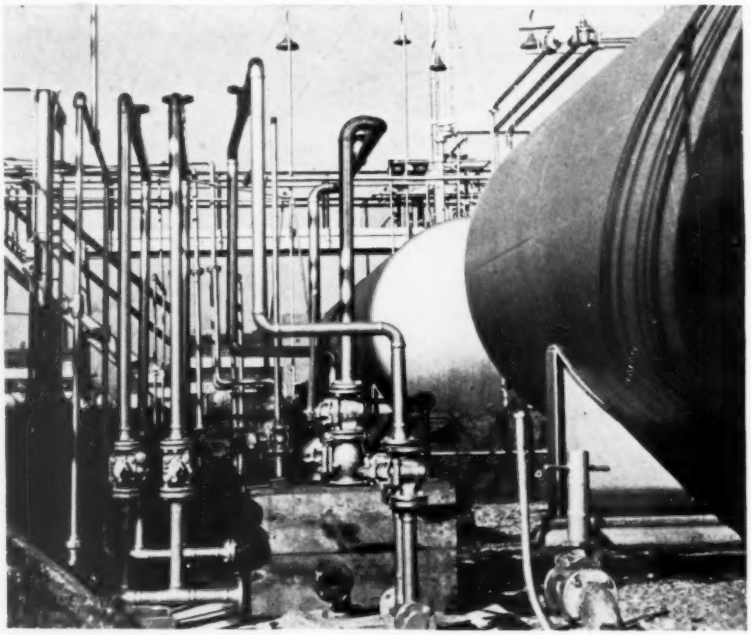
Flow chart, courtesy of Westinghouse Engineer



FROM oil or gas well, from coal mine or grain field, the use of Nordstrom Valves plays a vital part in the production of rubber. Not only are they serving oil and gas lines, but also on chemical, air and water lines. Valves of Semi-Steel, Nordco Steel, Stainless Steel and Special Alloys are used.



Two Nordstrom 14" chain operated spur gear cast steel valves installed on a recovery tower in a synthetic rubber plant.



Nordstrom Valves on raw material transfer pump lines. Nordstroms are extensively used on polymerization units and reactor chambers; also on low temperature lines and high temperature hydrocarbon lines in refineries.

Photos shown are by courtesy of Firestone Tire and Rubber Co.

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RECENT COURT DECISIONS
Affecting Gas Utilities

Review of Gas Rate Litigations

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

EVERY GAS OFFICIAL, as well as all gas company employes, frequently have occasion to determine questions of gas rate law. In many instances, a correct solution of the problem presented avoids complicated legal controversies and, consequently, results in a great saving of time and money. Moreover, although it is impossible to avoid legal controversy, one who is familiar with the established law, may readily build a logical foundation upon which to win the law suit.

Undoubtedly, the most practical and interesting plan of acquiring legal knowledge involving gas litigations is acquiring knowledge of the cause and outcome of the important gas litigations. Therefore, in this article we shall briefly review all important leading higher court cases, involving various phases of gas rate litigations, decided during the past few years.

If a gas company is not satisfied with rates established by the Public Service Commission the sole method of review from the order is by an appeal to a court. Under ordinary circumstances new evidence cannot be presented to the court upon the aupeal. Therefore, since the court will refer strictly to the testimony and data presented and made before the Public Service Commission, it is essential that the Commission shall conduct a fair and open hearing and the gas company must be given opportunity to challenge the result found by the commission. See, West Ohio Gas Company v. Public Utilities Commission, 294 U. S. 63.

Another important point of law is that before a court will render its decision involving the validity of a gas rate it will review both the law applied by the Public Service Commission and the evidence introduced during the hearing to ascertain whether the order of the commission is unlawful and reasonable. See Public Utilities Commission, 120 N. E. 330; and Clairsville v. Public Utilities Commission, 132 N. E. 151.

If the decision rendered by the Commission is manifestly against the weight of the evidence, and in violation to a state law, its decisions will be reversed. See, Settle v. Public Utilities Commission, 114 N. E. 1036.

It is well established law that under no conditions will the courts uphold the validity of a rate made by a Public Service Commission, if the enforcement of such rates is "confiscatory" or so low that the gas company cannot earn a "reasonable" income based upon its investment and operating expenses.

When determining whether a rate is confiscatory, the court will carefully examine the evidence and exercise its independent judgment, and without influence of the Public Service Commission. See, Ohio Valley v. Ben Avon Borough, 253 U. S. 287; Utilities v. Public Utilities Commission, 267 U. S. 359. This law conforms with the above explanation that the court will not consider new evidence but it must thoroughly review and consider all of the evidence presented and considered by the Public Service Commission during the complete hearing.

Property Valuation

Various higher courts have held that one standard for determining the validity of rates is the cost of reproduction less depreciation. However, for rate-making purposes only such property that is useful for the *convenience* of the public may be considered as the company's legal assets. Therefore, the court will decide whether the revenue capable of being raised by the established rates yields a reasonable net income. This decision must be based upon testimony presented by both the gas company and the Public Service Commission. See, Virginia, 290 U. S. 190.

On the other hand, a rate which is not certainly confiscatory, by reason of the net yield being somewhat above the point of confiscation, and yet is not a just rate as between the public and the gas company may be valid. See, Portsmouth v. Public Utilities Commission, 140 N. E. 604.

Generally speaking, in a litigation involving the right of a Public Utility Commission to compel a gas company to lower its rates, the validity or constitutionality of the state laws which authorize the Commission to function is an important consideration.

However, this rule of law is not applicable when the Commission endeavors to compel the gas company to *increase* its rates.

For instance, in Public Service Commission v. Great Northern Utilities Co., 284 Pac. 772, it was disclosed that an established gas company adopted rates from 50 cents per 1,000 cubic feet down to 30 cents per 1,000 cubic feet. Later a rival company commenced serving a part of the city at considerably lower rates. Soon afterward the older company reduced its rates still lower. The new company complained to the Commission and after a hearing the Commission ordered the older company to file its schedule fixing its rates the same as those of its rival.

The right of the Commission to compel the gas company to increase its rates was an important consideration. It was contended that enforcement of the order by the Commission to increase the rates depended upon

its authority derived from state laws. However, the court refused to consider this argument, and said:

"In the ordinary action challenging an order requiring a utility to lower its rates on the ground that the order is unjust and unreasonable, the only question presented would be as to the constitutionality of the statutes authorizing such enforcement. Here the order is not that the utility should lower, but that it should raise its rates, and the constitutionality of the statutes could only be raised on a showing of injury or prejudice."

Validity of Ordinance

A rate establishing city ordinance is not valid unless directly or indirectly authorized by a state law. But when valid circumstances may exist under which a gas company may adopt rates less than the maximum rates specified by the city ordinance.

For instance, in the late case of Community Natural Gas Co. v. Natural Gas & Fuel Co., 34 S. W. (2d) 900, it was shown that two gas company competitors held franchises in the same city to supply gas to the inhabitants. The company to last receive its franchise began extending its mains paralleling those of the older company in the most remunerative domestic districts, and began soliciting the older company's patrons at rates which were lower than those of the older company.

The city passed an ordinance fixing the maximum gas rates at $1.25 for the first M; 65 cents per M for the next 4 M; and 55 cents per M for all above 5 M. Soon afterward the older company advertised and put into effect a rate of 35 cents per M, with a $1.05 minimum monthly rate. The newer company thereupon brought suit to enjoin its competitor from putting into effect its advertised rates on the contention that this company was not permitted, in view of the maximum ordinance, to charge for gas less than the maximum price specified by the ordinance.

However, it is important to know that the higher court held the gas company within its legal rights in charging the lower rate, and explained the law on the subject as follows:

"The city could not make rates for one corporation which were higher or lower than the rates made for another corporation for the same services to the same patrons in the same territory that would be legally binding as fixed rates. This the city does not appear to have attempted to do. All that it did, as we interpret the several franchise ordinances, was to fix maxima for each corporation, leaving them free to compete in the matter of rates within the maxima."

So, therefore, it is quite apparent that the courts endeavor to interpret a gas rate ordinance in accordance with the original intentions of the municipal council which enacted the ordinance. Usually a decision rendered by a lower court on this basis is valid and will be upheld by the higher court, providing valid state laws were not violated.

Law Held Void

It is fundamental law that the judicial power of the courts to declare legislative gas rates invalid will be exercised if the constitutional invalidity is manifest. Therefore, any and all state statutes or city ordinances are void which prevent gas corporations from having rates adequate to net a reasonable return on the investment.

For illustration, in Avant Gas Service Co. v. Corporation Commission et al., 89 P (2d) 291, it was shown that several years ago a state law in Oklahoma was passed which prohibits gas companies from making a fixed minimum charge. This law provides further that the consumers shall be charged only for the

Carboseal Anti-Leak

Gas company superintendent reports, "evermounting beneficial results."

A GAS company changed over from the distribution of wet manufactured gas to dry gas and later discovered considerable leakage in the bell-and-spigot joints of its gas mains. To stop the leaks, the joints in part of the system were recaulked . . . without success. The company later excavated through pavement on this part of the system . . . an expensive job . . . and clamped the joints.

On another part of the system the company superintendent then experimented with CARBOSEAL Anti-Leak, a liquid that swells the joint packing approximately 44 per cent in volume. Leakage was stopped. Three years later a recheck was made on the treated mains to determine the permanence of the Anti-Leak treatment. *On 4,000 feet of treated main, 65 previously reported leaky joints were tight and no other leaks were in evidence.*

The company now makes it a practice in all its dry-gas systems to treat bell-and-spigot mains with CARBOSEAL Anti-Leak before street paving. To date, 20,000 feet of 4-inch main, 10,000 feet of 6-inch main, and 5,000 feet of 8-, 10-, and 12-inch main have been treated. The company superintendent reports: "We are satisfied that this method of main treatment is effective and the program can be continued with evermounting beneficial results."*

If you have a leakage problem in bell-and-spigot joints, in a dry-gas system, use CARBOSEAL Anti-Leak. It may solve your problem as successfully as the problem was solved for this company. For further information write for the book, "Correcting Leakage in Gas Distribution Systems with CARBOSEAL Anti-Leak."

***Reprints of the superintendent's article are available.**

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gas used or consumed, as registered by the gas meter, and stipulated a flat meter rate without a service charge.

The gas company, for a number of years, lost money in furnishing gas to the inhabitants of a municipality solely by reason of this state law. Therefore, the higher court held the law invalid, and said:

"The evidence, without room for doubt, shows that the gas company cannot continue in business and serve the citizens at a flat meter rate alone and avoid ultimate loss of its property. It is entitled to operate its business and to realize a reasonable profit therefrom. Any statute that would deprive it of either of those rights stands squarely in opposition to that portion of the 14th Amendment to the Federal Constitution, U.S.C.A., which declares that the State shall deprive no person of his property without due process of law. Though the company's business is stamped with a public interest, it is entitled to operate the same and to receive from such operation a fair return in profit to be calculated under certain established rules and principles applicable in such cases. If the State in its attempt to regulate rates and service goes beyond that point of restriction, it must be concluded that it has exceeded the limitations placed upon it by the Federal Constitution. . . ."

It is important to know that monthly service charges and minimum monthly bills have been recognized by the higher courts in a number of states as necessary elements in fixing reasonable rates. This is so because the cost of service without minimum charge unequally distributes gas among consumers. See City of Rochester v. Rochester Gas & Electric Corp., 233 N. Y. 39; and Rivelli v. Providence Gas Co., 44 R. I. 76.

Also, see New York & Queens Gas Co. v. Prendergast, 1 Fed. (2d) 351. In this case the Federal court had under consideration a statute of New York fixing a maximum flat rate per thousand cubic feet for gas, prohibiting a service charge. Concerning the question of fixing rates under those statutes, the court announced the rule as follows:

"It is within the power of a Legislature to prescribe the form of charges by a gas company, and a statute prohibiting a 'service charge' is in itself constitutional and valid; but when, taken in connection with another statute or order of a Public Service Commission fixing a maximum price for gas, it so reduces the entire permissible charge that it becomes confiscatory, and it is unconstitutional."

Also, in United States Light & Heat Corp. v. Niagara Falls Gas & Electric Co., 23 F (2d) 719, the higher court summed up the legal effect of state statutes of this nature, when the same interfere with the gas utility's right to a reasonable return on its investment, and said:

"Here, as already stated, the evidence in its entirety warrants holding that in prohibiting the so-called service charge to consumers of gas at Niagara Falls, the gas company is estopped from allocating the cost of production to the consumers in equal proportions, and, moreover, is prevented from earning a reasonable profit upon its invested capital. The enforcement of the particular statute in controversy must therefore be held to be confiscatory."

Not Monopolistic

It is true that certain laws, as Sherman and Clayton anti-trust laws prohibit monopolistic practices by sellers of any and all merchandise, and commodities, including gas.

On the other hand, the courts agree that the object sought to be attained by anti-trust laws is not that every "combination" is illegal, but rather to forbid the formation of illegal combinations. Moreover, the mere "fixing" of gas rates does not violate the United States Constitution although this contention has often been presented to the court. Therefore, a law is valid by which gas rates are fixed, providing such rates are not so low that the income capable of being earned by the gas company is unreasonably inadequate, although the law prevents the gas company from making contracts to sell its product.

For illustration, in Great Northern Utilities Co. v. Public Service Commission, 293 Pac. 294, it was disclosed that a Public Service Commission fixed the maximum and minimum rates to be charged for gas. The Commission acted by authority of a state law. The gas company filed suit contending that the statute is void and invalid. However, the higher court held the law valid, saying:

"It is conceded that legislation may be enacted determining the maximum charge to be made by a public utility; but the specific objection here is that to fix a *precise* rate is violative of the Fourteenth Amendment to the Constitution of the United States, in that it deprives the utility of its constitutional right of freedom *of contract* in relation to its property. . . . We are of the opinion that the power conferred by our statute upon the Commission to fix precise rates does not controvene the provisions of the Fourteenth Amendment to the Constitution of the United States."

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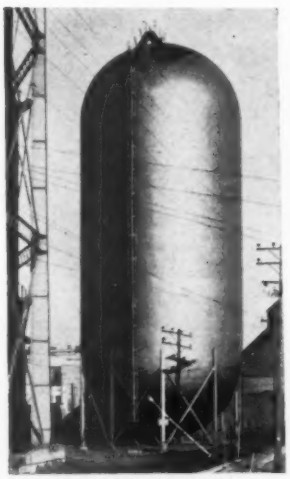

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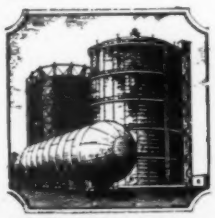

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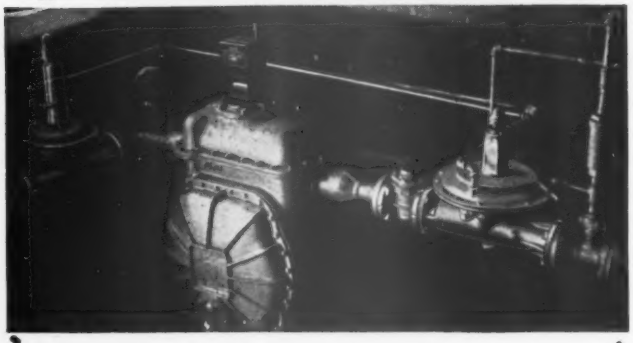

(Photograph of actual plant installation)

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BECAUSE Lavino Activated Oxide is made *specifically* for maximum sulphur removal . . . is not just a "satisfactory" purifying medium by virtue of incidental properties . . . its practical capacity and activity are *controlled* factors. Its performance is thorough and uniform. And, its activity for trace removal and its shock resistance are high.

Use Lavino Activated Oxide supplied in unmixed form ready for mixing with your own carrier. Or, use Lavino Activated Sponge where an oxide is desired already coated on large, tough, specially selected hardwood shavings.

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Buy More War Bonds

War Production Board and Other Administrative Orders

Metal Plumbing and Heating Equipment

(Limitation Order L-79 as Amended June 28, 1943)

The fulfillment of requirements for the defense of the United States has created a shortage in the supply of metals for defense, for private account and for export; and the following order is deemed necessary and appropriate in the public interest and to promote the national defense:

Section 1154.1 **General Limitation Order L-79—(a) Definitions.** For the purposes of this order:

(1) "Metal plumbing equipment" means any of the following items which are composed of metal to the extent of 50% or more by weight:

(i) Plumbing fixtures, including only bathtubs, closet hoppers, closet tanks, grease interceptors, laundry trays, lavatories, shower receptors, shower stalls, sinks, sink and laundry tray combinations, and urinals.

(ii) Plumbing fixture fittings and trim.

(iii) Water heating equipment, including only direct fired water heaters which use coal, oil or gas as fuel, indirect type water heaters, hot water storage tanks and range boilers.

(iv) Cooking and baking equipment using coal, oil or gas as fuel for cooking, baking, or heating food, or for heating dishes or kitchen utensils, except machinery the manufacture or distribution of which is restricted by General Limitation Order No. L-83, as amended from time to time.

(2) "Metal heating equipment" means any of the following items which is designed to provide heat for the interior of a building and which is composed of metal to the extent of 50% or more by weight:

(i) Steam and hot water heating boilers which use coal or oil as fuel.

(ii) Cast iron heating radiators (other than electric steam radiators) including, but not limited to, cast iron tubular radiators and cast iron convectors.

(iii) Hot water circulator pumps, vacuum pumps, and condensation pumps.

(iv) Warm air furnaces which use coal or oil as fuel.

(v) Heating stoves and space heaters which use coal, oil or gas as fuel, except gas fired floor furnaces.

(vi) (Revoked June 28, 1943.)

(vii) Metal fuel oil tanks.

(viii) The following items of heating equipment using gas as fuel; steam and hot water heating boilers, warm air furnaces, floor furnaces, unit heaters, conversion burners, and gas steam radiators.

(3) "Ultimate consumer" means any person who purchases metal plumbing equipment or metal heating equipment other than persons who purchase metal heating equipment for resale without using such equipment for the purpose for which it was designed.

(4) "New metal plumbing equipment or new metal heating equipment" means any metal plumbing equipment or metal heating equipment which has never been used by an ultimate consumer.

(b) **General restrictions.** No person shall sell or deliver any new metal plumbing equipment or new metal heating equipment to an ultimate consumer except that, subject to the restrictions of any other order of the War Production Board.

(1) Any person may sell and deliver any item of new metal plumbing equipment or new metal heating equipment which item is sold by him for no more than five dollars ($5.00): Provided, That such item is sold as a part of an order the total cost of which to the purchaser is not more than ten dollars ($10.00);

(2) Any person may sell and deliver any new metal plumbing equipment or metal heating equipment pursuant to an order or contract which bears a preference rating of A-10, or better;

(3) Any person may sell and deliver any of the following listed equipment:

(i) (Revoked August 11, 1942)

(ii) Any equipment which is specifically designed as hospital equipment, surgical equipment, dental equipment, veterinarian equipment, barber-shop equipment or beauty shop equipment;

(iii) Any equipment which is sold and delivered pursuant to an order received or contractual engagement made prior to April 17, 1942, provided that delivery is made not later than June 30, 1942;

(4) Any person may sell and deliver any new metal plumbing equipment or new metal heating equipment concerning which the purchaser has made a signed statement to him, listing all new metal plumbing equipment or new metal heating equipment to be sold or delivered:

(5) Any person may sell and deliver any new metal plumbing equipment pursuant to specific authorization of the War Production Board on Form PD-423; and/or new metal heating equipment.

(6) Nothing in this order shall be construed to limit the sale or delivery of any equipment which is to be used for the purpose of converting oil burning equipment or gas burning equipment to coal burning equipment.

Notwithstanding any provision of this order, no person may sell or deliver to an ultimate consumer any such equipment the transfer of which is subject to a ration order issued by the Office of Price Administration: Provided, That such sales or deliveries may be made in accordance with such ration order.

Issued this 28th day of June, 1943.

Fuel Regulation

Amended Supplementary Order No. 2 to Petroleum Administrative Order No. 11, affecting production operations in Eastern Ohio, Eastern Kentucky, West Virginia, Pennsylvania and New York, has been issued by the Petroleum Administration for War. The amendment became effective July 15, 1943.

By the provisions of four important changes, the amended Supplementary Order:

1. Allows 5-acre spacing for oil wells to a depth not exceeding 1,200 feet in lieu of the former provision allowing this spacing to a depth of only one thousand feet; ten-acre spacing for oil wells more than 1,200 feet deep but not exceeding 2,500 feet; and twenty-acre spacing for oil wells exceeding 2,500 feet in depth continue unchanged.

2. Permits the installation of pumping or other artificial lifting equipment on oil wells drilled to a depth of 2,500 feet or less, to which

at least five productive acres can be attributed.

3. Extends the area covered by the Supplementary Order to that part of the State of Ohio which is included in and which lies east of the counties of Lorain, Ashland, Richland, Knox, Licking, Fairfield, Hocking, Vinton, Jackson, and Lawrence, and to that part of the State of Kentucky which is included in and which lies east of the counties of Lewis, Fleming, Bath, Menifee, Powell, Estill, Jackson, Laurel, and Whitley.

4. Deletes the provisions for secondary recovery operations in certain parts of New York and Pennsylvania, since secondary recovery operations are now permitted anywhere in the United States under the provisions of Supplementary Order No. 6 as recently amended.

Oil and Gas Burning Domestic Space Heaters

(Limitation OrderL-173 as Amended July 13, 1943)

§ 3023.1 *General Limitation Order L-173*—(a) *Definitions.* For the purposes of this order:

(1) "Domestic space heaters" means any device (except electric) for the direct heating of the space in and adjacent to that in which the device is located, designed for use without heat distribution pipes or ducts as integral parts of such heating devices, and includes but is not limited to circulating heaters, radiant heaters, floor furnaces and wall furnaces: *Provided*, That "domestic space heaters" does not include direct fired gas unit heaters.

NOTE: Paragraph (1) amended Sept. 19, 1942.

(2) "Fuel oil" means any liquid petroleum classified as grade No. 1, 2, 3, 4, 5, or 6, including Bunker "C" fuel oil, kerosene, range oil, gas oils and other liquid petroleum products used for the same purpose as the above designated grades.

(b) *General restrictions.* (1) No person shall manufacture, fabricate or assemble any domestic space heaters using fuel oil as fuel, except:

(i) To fill a contract, subcontract or purchase order for such heaters for delivery to or for the account of the Army, Navy, War Shipping Administration, or Maritime Commission of the United States; or

(ii) For use in a building or project authorized under Preference Rating Order P-55-b or rated under Preference Rating Order P-55 or any order in the P-19 series; or

(iii) Any number of such heaters (other than floor or wall furnaces) in any calendar quarter beginning after June 30, 1943, which he can manufacture, fabricate, or assemble by using a total weight of iron and steel not in excess of 8% of the total weigh of iron and steel which he used in the manufacture, fabrication or assembly of such heaters during the twelve months' period, July 1, 1940 to June 30, 1941: *Provided*, That any heater manufactured under this subparagraph (iii) is of a capacity not greater than 30,000 B.T.U. output per hour.

(2) No person shall manufacture, fabricate, or assemble any floor or wall furnaces using gas as fuel except:

(i) To fill a contract, subcontract or purchase order for such floor or wall furnaces for delivery to or for the account of the Army, Navy, War Shipping Administration, or Maritime Commission of the United States; or

(ii) For use in a building or project authorized under Preference Rating Order P-55-b or rated under Preference Rating Order P-55 or any order in the P-19 series.

(c) *Replacement parts.* Nothing in this order shall be construed to prohibit or limit the production, by

(Payne Products Are in the Fight, from Ain-Beida to Reykjavik)

STREAMING to global war fronts—by 'plane, rail, ship, half-track, even camel-back—are strange new products of the PAYNE plant at Beverly Hills. They bear little resemblance to the furnaces we made in pre-war days, but each is built to the same high standards of precision and durability. ★ The device illustrated typifies PAYNE'S wartime production. After Victory, our Dealers will have even finer PAYNE heating equipment to supply post-war demand.

Illustrated: Photographic Print Washer for Field Lab., U.S. Army Air Corps.

PAYNEHEAT

NEARLY 30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

any manufacturer, of replacement parts for domestic space heaters using fuel oil or gas as fuel.

(d) *Appeals.* Any person affected by this order who considers that compliance therewith would work an exceptional and unreasonable hardship upon him, or that it would result in a serious problem of unemployment in the community, or that compliance with this order would disrupt or impair a program of conversion from non-defense to defense work, may apply for relief by addressing a letter to the War Production Board setting forth the pertinent facts and the reasons why such person considers that he is entitled to relief. The War Production Board may thereupon take such action as it deems appropriate.

Issued this 13th day of July 1943.

Rationing of Heating and Cooking Equipment

An O.P.A. Ration Order to become effective some time during August—date to be announced later—affects the manufacturer, wholesaler and retailer in the sale or exchange of gas ranges.

The utility wholesaler or retailer should contact his local War Price and Rationing Board and report, (1) the number of stoves on hand of each general type, (2) the sales made of each type in 1942 or the year showing most sales.

The local board will require each local distributing office to report independently and will establish an inventory ceiling by types.

The O.P.A. recommends that those having stock for disposal or exchange secure forms from their local Rationing Board in advance, so as to prepare an inventory of stock on hand and thus avoid delivery delays.

Wholesaler or retailer to make an exchange needs certificate No. 901 for delivery to name stated on certificate.

Complete details on this Ration Order will be available shortly.

Catalysts Exempt from Price Control

Under Amendment No. 21 to Revised Supplementary Regulation No. 1 effective July 27, 1943, all catalysts sold for use in the manufacture of synthetic rubber, aviation gasoline and toluene from petroleum are exempt from price control, the Office of Price Administration has announced.

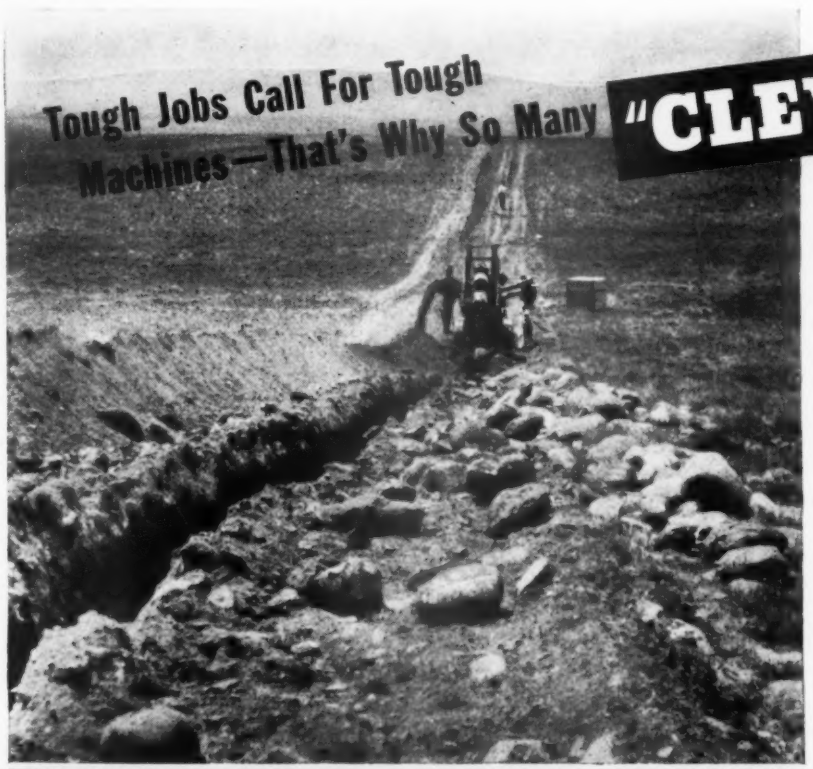
The exemption includes the entire class of catalysts and the action expands previous OPA actions in which certain types of catalysts were withdrawn from price control.

The exemption was incorporated in Amendment No. 21 to Revised Supplementary Regulation No. 1 of the General Maximum Price Regulation and is a continuation of the policy of removing from price control commodities to which price control cannot be applied readily without seriously handicapping the production of military supplies or whose economic value is insignificent.

Gild of Ancient Supplers

The Gild of Ancient Supplers of Gas Appliances, Skills, Gins, Accessories and Substances announce that the Great Council at a recent meeting voted to hold its annual Wassail coincidental with the Annual Meeting of the American Gas Association in St. Louis, October 11-13.

The Gild will also hold its own annual business meeting during that week at which officers will be elected for the ensuing two years.



THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVE "Pioneer of the Small Trencher" CLEVELAND, OHIO
"CLEVELANDS" Save More...Because they Do More

. . . Have Been Drafted Into Service and Why They're Preferred Equipment by Gas Companies

Wherever you put them—whether it's long main lines or in the congested city or suburb areas, "CLEVELANDS" deliver maximum trench footage with a minimum of times out.

In "CLEVELANDS" correct design—sturdy, superior quality construction—ample power—and a speed for practically every trenching need assures the stubborn performance necessary for licking the tough jobs.

That's why "CLEVELANDS" are preferred equipment on so many war emergency projects, current and recent.

Illustrated above an important Cleveland feature—Truck Speed Transportation on specially built trailers—Machines load or unload in about 15 minutes.

Santa Cruz Solves the Hegira Problem

By
W. B. Stoddard

"All of the small cities and many of the larger ones have suffered severely during the past year or two from the exodus of scores, and in many cases, hundreds of their citizens," said Chas. Grunsky, of the Santa Cruz Gas and Electric Co., Santa Cruz, Calif. "Many young men entered the armed service and whole families moved away to defense plant areas. This is a serious matter to all the merchants, who depend for their livelihood upon the residents of the town. Santa Cruz was one of the many small cities thus affected, so we decided something must be done to remedy the situation. So under the direction of the Chamber of Commerce, and with the hearty cooperation of all the merchants we entered upon a campaign to sell Santa Cruz to the nation. So successful were we that between September, 1942 and March 1943, over *800 families* migrated to our city, coming from practically every state in the union. We ceased our publicity in February, 1943, because so many people flocked to Santa Cruz that we had to hustle lively to find accommodations for them. We filled every vacant house, all the hotels, and are now urging every family to list their houses and rooms with us without delay to stem the tide of home seekers. We received literally thousands of letters in answer to our streamlined publicity campaign. Just what percent of them located here we were unable to say, but it was more than enough to take up the slack, and to cause a substantial increase in business in every line. Here, in brief, is the plan we adopted:

"In April, 1942, there were 1000 vacant houses in Santa Cruz, due mainly to the migration of families to accept work in defense jobs elsewhere. Because we had no defense industries, being mainly a city of homes and small business, the one thing we had to offer the public was vacant houses. A Military Affairs Committee was appointed by the Chamber of Commerce, and over that signature, letters were sent out to over 120 military, naval, marine and coast guard installations, informing the commanding officers of the large number of available houses here. (Because we are on the coast, where most of the training stations are naval, we contacted that class—in the interior, where army camps are more numerous, this, of course, would be the branch of service to interest). We urged families to come here to live while their men were overseas. We were safe because we had no defense industries to attract the Japs; living costs were low because of the many small poultry and vegetable raisers in this vicinity; and we had a modern home town, with excellent schools and churches. These letters were re-typed and distributed throughout the camps, some of which had garrisons of from 20,000 to 30,000 men. Small ads were placed in the Army and Navy Journal, and lists of realtors were sent to all those inquiring regarding the purchase of property here.

"A remote control was established in the Chamber of Commerce office, where a 15 minute program was put on twice a week, with local talent and a five minute talk upon the fact of good houses being available here. The California State Council of Defense at San Francisco greatly aided us as it fitted in well with their plan, which was to get those not working in defense plants to leave these areas and locate in small cities like ours, and through that organization two programs were put on at San Francisco, over the entire Columbia system. These programs were recorded, and from them, impressions were made which were sent to many smaller stations, so that the entire west coast was covered.

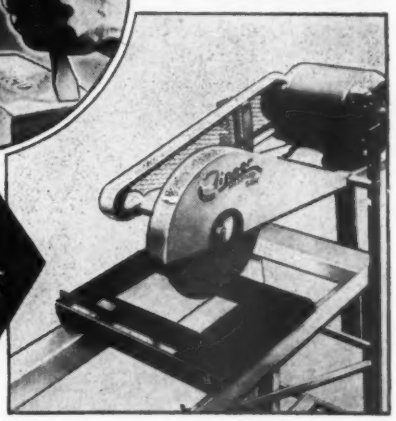
"In addition to letters of inquiry, large numbers of people came personally to look over our city. The Chamber maintained a complete list of available rentals. This list was given to all incoming prospects, together with a map of the city, and they could choose for themselves a house suitable in size and price. As I said at first, we discontinued all publicity in February, but we still get inquiries, to all of whom we send folders and data concerning the beauties of our city and country, rainfall, sunshine, fruits and flowers, and maps.

"At first we sent information and inquiries to the large shipbuilding plants at Berkeley and Oakland, urging defense workers to send their families to this peaceful spot, away from the crowded conditions prevailing there, but we had to stop that, as we received so many families of service men that we could not place any other class. The result of our campaign has been the filling of all vacant houses, and a fine increase of the population of good people, with small steady pay. All of these homes had to have heat and lights, so our own volume of business received a substantial boom."

CRUSE-KEMPER COMPANY
AMBLER, PA.
GAS HOLDERS • PURIFIERS • INSPECTION
40 YEARS OF SOUND
STEEL PLATE CONSTRUCTION

These Days ARE GONE FOREVER

But... THESE *ARE HERE TO STAY*



Clipper Masonry Saws eliminate "Hammer and Chisel" methods of firebrick and acid brick construction.

Precision cuts means longer lasting walls and arches. Write for the latest circular No. 35 on how to speed up and improve your new construction and maintenance work.

THE CLIPPER MFG. CO.
SUITE 12, CHOUTEAU BLDG.,
ST. LOUIS, MO.

All sizes up to 3,400 cu. ft. capacity

Meters
Diaphragms
Repairs
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Pumps
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Wet Meters
Gauges
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METER REPAIR PARTS

FOR
ALL MAKES — ALL SIZES OF METERS

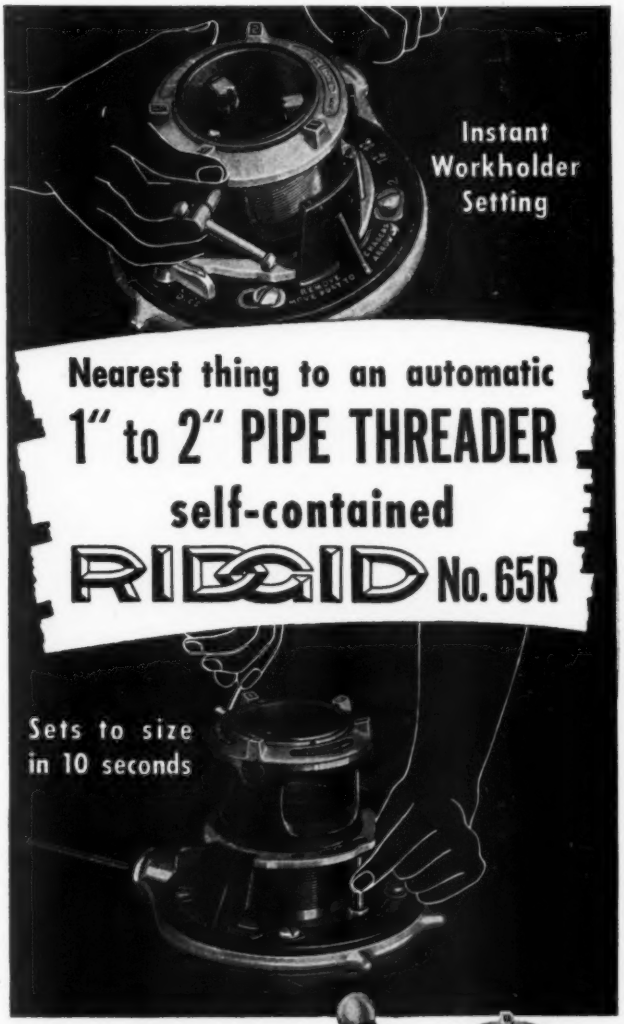
LARGEST GAS COMPANIES NOW USING OUR PARTS

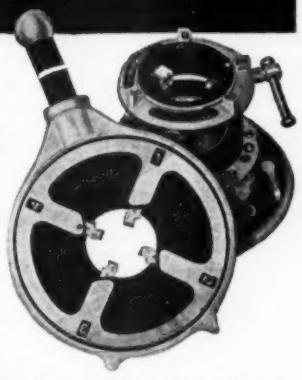
SEND FOR OUR CIRCULAR ON METER REPAIR PARTS

SAMPLES AND PRICES GLADLY SENT

— o —

LAMBERT METER CO.
PLAINFIELD, NEW JERSEY





YOU set it to thread 1", 1¼", 1½" or 2" pipe by a simple 10 second adjustment. You set the mistake-proof workholder to pipe size by an instant turn of the gauge ring, tighten only one screw — no bushings needed. It's almost automatic. No extra chaser dies to carry around—one high-speed steel set stays in the die stock, cuts micrometer perfect threads on all four sizes of pipe with easy ratcheted strokes. Steel and malleable durability. For smooth speedy and easy threading . . . ask your Supply House for this self-contained RIDGID No. 65R.

THE RIDGE TOOL COMPANY, ELYRIA, OHIO

RIDGID

Pipe Wrenches, Cutters, Threaders, Vises

Fast-Working Tools for War.. and the Busy Peace Ahead

A Handy Block & Tackle Chart

By
W. F. Schaphorst, M.E.
Newark, N. J.

HERE is a chart that will be found useful for determining safe loads and proper loads in connection with ordinary block and tackle.

By laying a straight edge across the chart, as indicated by the dotted line, the pull necessary to lift any weight up to 200,000 pounds is immediately given in Column B.

This chart takes into account the friction of the ropes and pulleys, which is less for a smaller number of ropes although the pull on the lead line is decreased if a larger number of ropes are employed.

For example: What pull on the lead line is required to lift 20,000 pounds with five ropes?

Solution: The graduation corresponding to 5 in column A is connected by a staight line with that corresponding to 20,000 in column C. The straight line intersects column B at approximately 4700, which is the pull required.

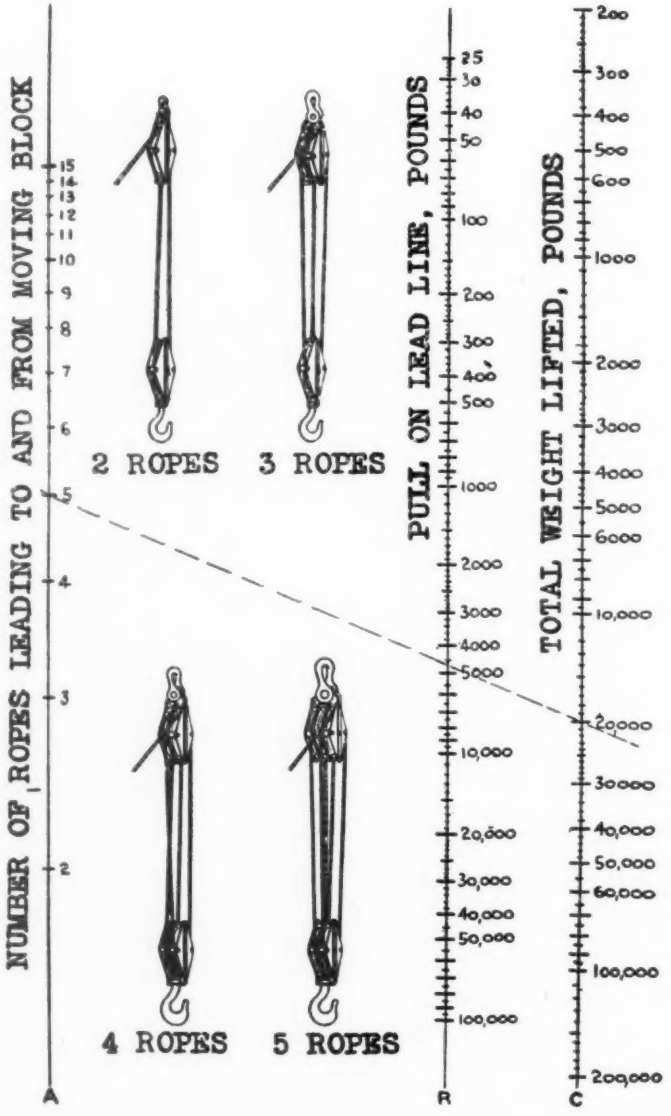
The number of ropes supporting the load and used in column A is determined by counting the ropes leading to and from the moving block as illustrated by the sketches.

In arriving at the stress in the lead line, the common practice is to divide the weight of the load by the number of ropes supporting it, but this is not correct as it does not take into account the friction of the blocks or the rigidity and internal friction of the rope. The maximum stress when hoisting occurs in the lead line, since this besides taking a proportion of load on a single supporting rope also takes the accumulated friction of the blocks and rope in all the other parts of the tackle.

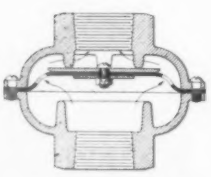
If, for example, a "seven rope" hoist is employed for raising a load of 35,000 pounds, according to the usual practice the stress in the lead line would be computed as 5,000 pounds, assuming that all parts pulled equally. This stress occurs, however, only in the becket line. The maximum stress is 6325 pounds as determined by test. The chart gives that figure very closely, as will be observed.

Although this chart is based on figures that were determined for wire rope tackle, it is also applicable to ordinary manila rope.

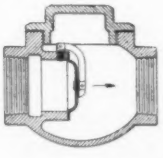
It must be remembered, when buying a rope for use in a block and tackle, that the rope must be strong enough to resist the "maximum" pull, which is the pull in the lead line.



Prompt Deliveries From Our Own Factory



HORIZONTAL
DIAPHRAGM
CHECK VALVES
DISC
VERTICAL



NORWALK VALVE COMPANY
85 Spring St. South Norwalk, Conn.

Plant Temperature Adjusted to Meet Outdoor Conditions

Guards Employes Against Colds and Discomfort

By

James Kearns

A NOVEL extra feature in the use of gas-fired comfort air conditioning to speed up vital airplane production has been introduced in the huge Consolidated Aircraft Corporation B-24 Liberator plant recently completed in Fort Worth, Texas.

The vast aircraft plant, now the largest bomber production center in the world, is completely air conditioned—not only for comfort, but because experiments and tests in previous Consolidated production has indicated definitely that "slumps" and many lost hours caused by common colds and discomfort can be eliminated by the precisely-correct artificial weather for every job. With thousands of employes transplanted from California and other states to the arid, often-hot Texas plains, the use of air conditioning in every phase of bomber construction guarantees the most for every hour of operation.

Many thousands of tons of air conditioning capacity are delicately balanced against the exact requirements of the work done in each factory area. As many as 18 varied temperatures are kept up at the same time, ranging from low temperature conditioned air in the shops where heated machinery creates a high load to air actually warmed before being washed, filtered and chemically cleaned before entering the huge paint shops. By close control, Consolidated has set a new record for elimination of sick hours and breaks in production formerly traceable to weather changes. Physicians check the temperatures in more than fifty zones concerned daily, and make their recommendations for any changes before another shift comes on.

Perhaps the most unusual forward advance in guaranteeing employe well-being introduced by Consolidated is the "flexible shift conditioning" program instituted to meet sharp variations in temperature through the day and night in this section of east Central Texas. Discovering through past records that most employe colds are caused when employes leave healthfully cool factory rooms for hot, humid outside temperatures, a system has been set up whereby every bomber-plant worker in the Consolidated factory is deliberately "conditioned" for the change from factory to outside asmosphere for one hour before his eight hour shift ends. This process centralizes on a master control board in the main powerhouse, where the temperatures of all zones are compared with the outside thermometer and relative humidity readings. Sixty minutes before the current shift is to go off work, the temperature is inconspicuously raised two degrees and thereafter increased by one degree at a time until the atmosphere in each zone corresponds with that outside. By limiting the number of degrees involved at each interval, the change is unnoticed by employes, but nevertheless does the important job of eliminating "shock" when leaving the building. At the same time, the new shift coming in finds no difference between exterior and interior temperatures. Cooling begins again immediately after the new shift is on the job.

This precise zone conditioning is made possible by turbine-driven refrigerating compressors. Three 100,000 horsepower, gas-fired boilers in the main powerhouse supply steam for twelve high r.p.m. steam turbines, directly connected to twelve high tonnage compressors. These, using freon refrigerant, chill water for distribution through 18 miles of pipe to individual fan stations located in the 65-foot ceilings of all buildings. The fan stations, both manually and thermostatically controlled, contain two blowers, two cooling coils, one heating coil through which hot water is circulated in winter. Individual duct work distributes the conditioned air, ending in rotating grille outlets which slowly revolve, directing the stream of conditioned air in constantly changing paths. In this way no employe is subjected to resistance-lowering drafts, and there is a more even conditioning pattern. The same system in winter provides heat through hot water circulated through the same piping, and similar exact control is maintained over the entire factory areas.

Water for condensing the refrigerant gas in the twelve compressors must be piped more than a mile from a nearby lake, and after being used for condensation, is returned to the lake. A similar system will be installed in still another gigantic Consolidated plant under construction elsewhere in the South.

PURIFICATION IS THE OUTPOST OF SMOOTH GAS PLANT OPERATION. GUARD THAT OUTPOST WITH THE OXIDE THAT IS THE PROVEN STANDARD FOR THE INDUSTRY.

GPM
IRON HYDROXIDE

GAS PURIFYING MATERIALS CO., INC.
Long Island City 2, N. Y.

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.
2180 East 65th St., Cleveland, Ohio ESTABLISHED 1895

Market in Liquefied Petroleum Gases in 1942

Sales of liquefied petroleum gases continued to expand strongly in 1942 as in recent years; however, difficulties connected with the war probably prevented the full supplying of the potential market. Distributors of liquefied petroleum gases reported sales of 585,440,000 gallons in 1942, a gain of 27 per cent over 1941 deliveries of 462,852,000 gallons according to data prepared by the Bureau of Mines, United States Department of the Interior. The increase in 1942 compares with a 48 per cent growth in demand in 1941 and a 40 per cent gain in 1940.

All principal uses of liquefied petroleum gases showed important gains in 1942 over 1941. The quantity (299,559,000 gallons) reported for domestic or household consumption in 1942 was 36 per cent above the 1941 total (220,722,000) gallons), a percentage increase somewhat below those made in 1941 (65 per cent) and 1940 (53 per cent).

Gas-manufacturing companies purchased 24 per cent more liquefied petroleum gases in 1942 (31,366,000 gallons) than in 1941 (25,255,000 gallons), about the same gain in requirements as made in 1941 over 1940. A 41 per cent expansion in the sales of liquefied petroleum gases for industrial fuel reported in 1941 (98,728,000 gallons) was not reached in 1942 (114,132,000 gallons) when the increase over 1941 was only 16 per cent. Difficulties in obtaining the more desirable butane for use as an industrial fuel was probably one of the reasons for the smaller relative growth in this particular use in 1942. Manufacturers of chemicals required 53,038,000 gallons of liquefied petroleum gases in 1942, or 20 per cent more than the 1941 total of 44,206,000—a gain compared with a 28 per cent increase in 1941 over 1940. Deliveries of liquefied petroleum gases for internal-combustion-engine fuel in 1942 of 82,456,000 gallons were 23 per cent above the 1941 total of 66,871,000, or about the same increment (24 per cent) as reported in 1941.

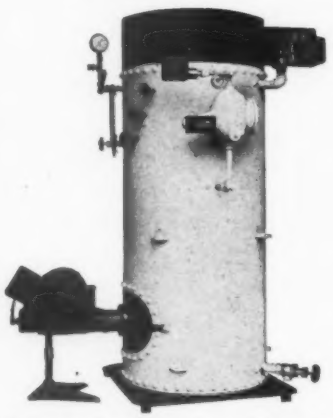
About one-fifth (22 per cent) of total liquefied petroleum gas sales in 1942 was reported as butane, compared with one-fourth (24 per cent) in 1941 deliveries. This drop in the butane proportion in the 1942 total followed a downward trend of recent years and a change which will probably continue as more butane is diverted for the manufacture of motor fuel, rubber and other products. The propane share in the marketed production of liquefied petroleum gases also continued to decrease (27 per cent in 1941 and 26 per cent in 1942) while the proportion of butane-propane mixtures in total deliveries accounted for a larger percentage. Butane-propane mixtures replacing butane for many uses constituted about 52 per cent of total sales of liquefied petroleum gases in 1942 compared with a 47 per cent share in 1941. Pentane, which is relatively unimportant in volume, made up less than 1 per cent of total requirements both in 1941 and 1942.

At the end of 1942, liquefied petroleum gas was being delivered through mains to consumers in 208 communities in 31 states by 92 companies supplying 69,140 consumers.

Butane-air gas with heating value ranging from 520 to 1,300 B.t.u. per cu. ft. was supplied to 153 communities in 30 States. A mixture of undiluted butane and propane gas with a heating value of 2,800 to 3,000 B.t.u. per cu. ft. was supplied to 15 communities in Arizona, California and Nevada. Undiluted propane gas with a heating value of 2,550 B.t.u. per cu. ft. was supplied to 40 communities in Maryland, Minnesota, New Jersey, North Dakota, Virginia and Wisconsin.

From Report prepared by A. T. Coumbe, under the supervision of A. G. White, Chief, Petroleum Economics Division; Economics and Statistics Service, U. S. Dept. of the Interior.

LATTNER
GAS — OIL BOILER
3 HP to 35 HP.



Burns natural gas or regular furnace oils with equal efficiency using same burner.

P. M. Lattner Mfg. Company
Cedar Rapids, Iowa

Laboratories Will Issue New Research Bulletin

A research bulletin covering automatic flash tube and pilot ignition of gas range oven and broiler burners operating on manufactured gases has been submitted to members of the Committee on Domestic Gas Research for review and approval prior to publication. It forms one of a series devoted to various phases of a comprehensive program of research on domestic gas appliances sponsored by this group. Coming at a time when so much attention is being devoted to development of equipment for the post-war period, its findings possess special significance.

Various methods of automatic ignition of oven burners are reviewed and development of flash tube application as well as service experiences with such systems are outlined. As an introduction to studies on flash tubes a full discussion is given of automatic ignition systems employing constant burning pilots and automatic valves as well as a description of such systems now in common use. While automatic top burner lighting by use of flash tubes was thoroughly covered in a previous bulletin, many questions have arisen on the ignition of oven burners using flash tubes from the top burner pilot.

The main portion of the new bulletin is devoted to results of an intensive study of the effect of such features as shape of flash tubes, relation between their diameter and length, area and position of relief openings, tube restrictions, relationship between lighter port sizes input rating and diameter of tubes, and numerous others. One of the most striking findings is the length of flash tube which may be employed with satisfactory ignition providing adequate diameter is employed. While the maximum length of a vertical tube of .31 in. I. D., permitting proper lighting was 1 ft. this could be increased to 10 ft. with satisfactory ignition when a tube of ¾ in. I. D. was employed. Use of relief openings of proper size near the top of the vertical section of flash tube, as well as presence of cones at the bottom of the tubes was found to increase their range of satisfactory operation. Likewise use of larger radius of curvature in the case of curved tubes was found to increase range of operation.

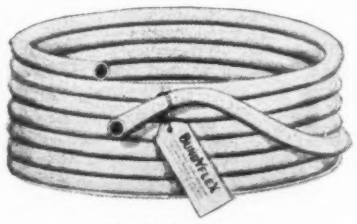
Employing the principles determined from this study, successful application of flash tube systems were made to contemporary ranges including one equipped with a high broiler. These experimental systems gave more rapid and more consistent oven and broiler ignition than was obtained by using a commercial flash tube assembly of the type formerly furnished. As its service record has been quite satisfactory over a period of years, flash tube assemblies embodying the refinements and improvements resulting from the present investigation may logically be expected to bring about still further improved performance.

Studies reported in this bulletin are confined to those obtained with manufactured gases of types commonly distributed. Similar studies covering natural gas will be presented in a later publication.

New Equipment and Appliances

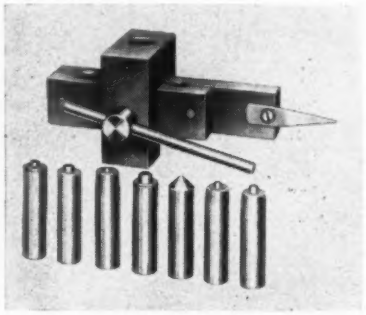
Flexible Copper Coated Tubing

A soft steel tubing, copper coated both inside and out, is offered by Everhot Products Co., 2055 W. Carroll Ave., Chicago 12, Illinois.



Bundyflex Tubing

This tubing is made in sizes ⅛" to 7/16" O.D. and ½" and ⅝" in plain steel finish. It is claimed that it can be bent to practically any shape, hard or soft soldered, brazed or welded and used for many purposes in place of ordinary copper tubing.



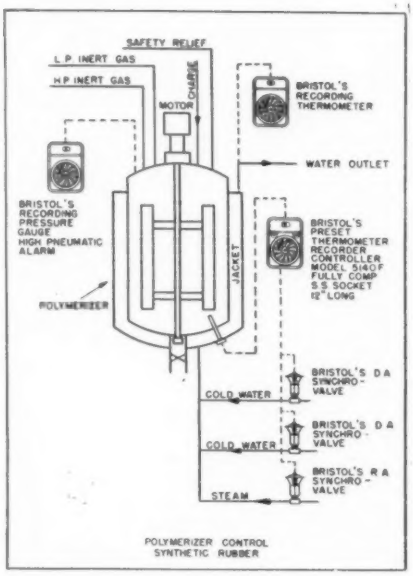
Flaremaster Tool

A portable tool to produce a double-lap flare on tubing ⅛" to ⅝" O.D. is offered by the same Company. It consists of a pair of holding jaws, a U-shaped clamp, built-in vise, 45° flaring punch and a set of hardened steel forming punches. This tool can also be used for aluminum, copper, monel and similar tubing.

Bristol Temperature Controller

This new instrument incorporates in a single instrument all the equipment needed to automatically control the temperature in polymerizers used for polymerization of butadiene and copolymers such as styrene or acrylonitrile.

The instrument automatically controls the complete polymerization process, including the heating and cooling cycles and is designed to eliminate overshooting of the control point as the temperature



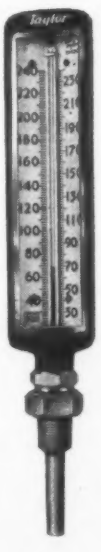
reaches the control setting as well as control the temperature at the desired value during the reaction cycle.

The instrument is a recording air-operated controller designed particularly for polymerizer reactors.

For further information write The Bristol Company, Waterbury, Conn.

New Industrial Thermometer

Taylor Instrument Companies, Rochester, New York, have designed, tested in the field, and are now introducing a one-piece Industrial Thermometer described in bulletin 98030.

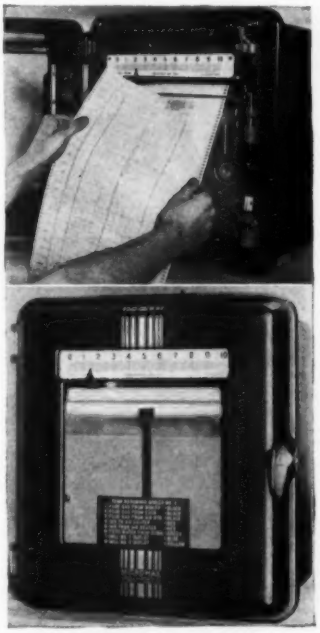


The one-piece case is shallow which makes it possible to see the mercury column through a wider angle of vision. The chromium-plated bezel fits snugly into the grooved case in such a way as to hold the thick glass front securely against tension springs. This construction results in a dustproof, rattleproof, and practically fumeproof thermometer.

The new instruments are equipped with easy-reading Binoc tubing. They are furnished in many combinations of straight and angle stems, with threaded or union connections, and in many standard temperature ranges, within the limits of —40°F. to +750°F. Standard scale lengths are 7" and 9". Numerals are bold and clear, standing out sharply against a contrasting background.

Daily Tear-Off Device for Strip-Chart Recorders

This new device enables users of Micromax strip-chart recorders to tear off and file a record of each day's operation. Made to fit modern Micromax Recorders, which have been standard since 1936, the device can be quickly and easily attached. When used, there is no wasted chart, and it is not necessary to rethread the chart through the guides. A rubber stamp can be furnished which identifies the recorder and the location of the thermocouples.



Strip Chart Recorder

Daily strip-chart records are thus provided in a form as convenient to file as those from round-chart recorders, yet with the strip-chart advantage of a more detailed record, as well as the multiple-point feature available only with strip-charts. For complete details, write Leeds & Northrup Company, 4901 Stenton Ave., Philadelphia, Pa.

News of the Gas Industry

Federal Power Commission On Natural Gas Supplies

Orders Further Hearing Held September 8 for Applicant to Make Showing

The Federal Power Commission, in an opinion announced July 7th, said it would authorize issuance of a certificate of convenience and necessity to the Tennessee Gas and Transmission Company for the construction and operation of a 20-inch natural gas pipe line from Louisiana to Kentucky if applicant would present satisfactory evidence of ability to finance the line, ability to obtain adequate supplies of natural gas, and authorizations from the War Production Board for the required materials. The Commission ordered that hearing be held commencing at 9:45 a.m., September 8, 1943, in the Commission's hearing room in the Hurley-Wright Building, 1800 Pennsylvania Avenue, N. W., Washington, D. C., to give applicant an opportunity to make the required showing.

"If the further showing by the Applicant, Tennessee Gas and Transmission Company, on the matters herein required is satisfactory to this Commission," the opinion states, "it is then our intention to authorize the issuance of a certificate of public convenience and necessity to the Company to authorize the construction and operation of facilities for the transportation and sale of natural gas as presently requested by it."

Says Line Needed to Relieve Gas Shortage in Appalachian Region

The principal service to be rendered by the proposed line, the opinion says, is the delivery of natural gas at its northern terminus to natural gas companies now serving the Appalachian region and, thereby, to relieve the gas shortage now present in the region and imminently becoming intense and critical.

Stating that it is the considered judgment of the president of the Hope Natural Gas Company and the vice president and general manager of the Columbia Gas & Electric Corporation (which, together with their affiliates, are estimated as furnishing about 60 percent of the total natural gas requirements in the Appalachian region) that their companies will not have sufficient gas from Appalachian sources to meet their normal operations at the conclusion of the war emergency, the opinion adds:

"Estimates of supply and demand covering systems handling 80 percent of the region's requirements indicate that for the year 1943 the shortage will run to some 15 billion cubic feet. The 1943-44 peak day estimate will not be met by approximately 300 million cubic feet.

"There appears to be no relief for the shortage from sources within the region. It is clear from the testimony of record that for a considerable period none of the companies operating in the region has had material quantities of gas available for sale to one another in addition to existing transactions. In fact, officials of the companies in the area indicated that relief must come from outside the region.

"Upon the record before us, it is apparent that no purpose will be served by further laboring the obvious. It is crystal clear that additional natural gas is needed in the Appalachian region. It follows, therefore, that a realistic view of this situation definitely shows that the public convenience and necessity will be served by the construction and operation of the Applicant's pipeline into the area, if the additional showing /by Tennessee Gas and Transmission Company/ hereinafter referred to is made."

All Parties of Record To Be Further Heard at Hearing

The order and opinion announced in July provide that interested State Commissions and interveners of record may continue participation in the proceeding, as provided by the Provisional Rules of Practice and Regulations under the Natural Gas Act, when hearing is reopened September 8. In addition to representatives of the Commission and the applicant, parties of record in the proceeding include representatives of the Public Service Commission of Louisiana, the Department of Commerce and Industry of Louisiana, the Department of Public Utilities of Arkansas, Kentucky-Tennessee Natural Gas Corporation, the City of Cleveland, Ohio, the City of Cincinnati, Ohio, the National Coal Association, The United Mine Workers of America, Southern Appalachian Coal Operators' Association, the Anthracite Institute, the Railroad Labor Executives Association, the Nashville, Chattanooga and St. Louis Railway Company, the Louisville & Nashville Railroad, the Illinois Central Railroad, the Southern Railway, Central, New Orleans & Texas Pacific Railway, Harriman & Northeastern Railroad, Alabama Great Southern Railroad, Gulf Mobile & Ohio Railroad, and the Chattanooga Gas Company.

The facilities involved in the application of Tennessee Gas and Transmission Company would consist of a pipe line from near Opelousas, Louisiana, through the States of Louisiana, Mississippi, Alabama, Tennessee, and Kentucky to a northern terminal near Ashland, Kentucky, or such other point of termination as may be designated by the appropriate government agency. The projected route passes near Natchez, Mississippi, Muscle Shoals, Alabama, and Nashville, Tennessee. According to the application, applicant intends later to seek a certificate for a branch line taking off from the line described above at Brace, Tennessee, and extending east by way of Chattanooga and Knoxville, Tennessee, to Asheville, North Carolina.

Industrial Scrap Drive

A total of 696 salesmen of steel mills, warehouses and public utilities in the New York and Northern New Jersey region have volunteered to help the War Production Board ferret "dormant" scrap out of this region's industrial plants in a new, intensified campaign to increase "dormant" scrap collections, it was announced by Thomas W. Hoyt, Regional Salvage Director.

Due to the need of getting in more heavy scrap, the "dormant" scrap drive will be continued in this region.

Some 215 men from three public utilities have agreed to act in a similar capacity. Of these, 175 have been made available by the Consolidated Edison Company of New York, 6 by Jersey Central Power and Light Company and 35 by Public Service Company of New Jersey.

Supplied with lists of companies either by WPB or by the heads of industrial salvage committees, these men will discuss the scrap activities of individual plants throughout the region with presidents, plant managers and salvage executives, reporting to WPB on the scrap collection work in progress in each plant. When invited to do so, they will accompany salvage executives on a tour of each plant in an effort to identify additional items of "dormant" scrap.

THE STACEY MANUFACTURING CO.
Engineers Fabricators Constructors
• Gas Holders • Gas Plant Equipment • Steel Plate Construction •
GAS HOLDER INSPECTION SERVICE
Cincinnati — Ohio
91
STACEY SINCE 1851
Years

A.G.A. Nominating Committee Reports for Coming Year

The report of the General Nominating Committee of American Gas Association will be presented to the Annual Meeting in St. Louis, October 12:

For President—Ernest R. Acker, President, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y.

For Vice-President—J. French Robinson, President, The East Ohio Gas Company, Cleveland, Ohio.

For Treasurer—J. L. Llewellyn, Insurance Manager, The Brooklyn Union Gas Company, Brooklyn, N. Y.

For Directors—two-year terms: F. M. Banks, Vice-President, Southern California Gas Company, Los Angeles, Calif.

Walter C. Beckjord, Executive Vice-President, Columbia Gas and Electric Corporation, New York.

C. M. Cohn, President, Consolidated Gas Electric Light & Power Co. of Baltimore, Baltimore, Md.

Watson E. Derwent, Vice-President, Geo. D. Roper Corporation, Rockford, Ill.

R. L. Fletcher, Vice-President, Providence Gas Company, Providence, R. I.

D. A. Hulcy, President, Lone Star Gas Company, Dallas, Texas.

E. P. Noppel, Ebasco Services Inc., New York.

Bruno Rahn, President, Milwaukee Gas Light Company, Milwaukee, Wis.

Louis Ruthenburg, President, Servel Inc., Evansville, Ind.

E. J. Tucker, Director and General Manager, Consumers Gas Company of Toronto, Toronto, Ontario.

H. Carl Wolf, President, Atlanta Gas Light Company, Atlanta, Ga.

Respectfully submitted,

Section Nominations

The following have been nominated by Section Nominating Committees to serve as Section officers for the next Association year:

Natural Gas Section: For Chairman—R. E. Wertz, Amarillo Gas Company, Amarillo, Texas. For Vice-Chairman—R. H. Hargrove, United Gas Pipe Line Company, Shreveport, La.

Accounting Section: For Chairman—O. H. Ritenour, Washington Gas Light Company, Washington, D. C. For Vice-Chairman—C. E. Packman, Middle West Service Co., Chicago, Ill.

Industrial & Commercial Gas Section: For Chairman—Charles G. Young, Springfield Gas Light Co., Springfield, Mass. For Vice-Chairman—Harry K. Wrench, Minneapolis Gas Light Co., Minneapolis, Minn.

Manufacturers Section: For Chairman—Malcolm Leach, Glenwood Range Co., Taunton, Mass.

Publicity & Advertising Committee: For Chairman—Charles A. Tattersall, Niagara Hudson Power Company, New York.

Residential Section: For Chairman—C. V. Sorenson, Northern Indiana Public Service Co., Hammond, Ind. For Vice-Chairman—J. H. Warden, Oklahoma Natural Gas Company, Tulsa, Okla.

Technical Section: For Chairman—Charles F. Turner, The East Ohio Gas Company, Cleveland, Ohio. For Vice-Chairman—L. E. Knowlton, Providence Gas Company, Providence, R. I.

Results P.C.G.A. Post-War Appliance Planning Contest

The contest fostered originally for women only by Gladys Warren, Chairman of the Women's Committee, under the caption "Have You Ever Seen a Dream Cooking?", and adapted by W. H. Jacobs, Chairman of the Post-War Appliance Committee, to include sales and service personnel, has been concluded. Entries were received from 8 of the association's 13 gas company members.

More than 400 men and women employes who are in constant contact with consumers submitted ideas for possible improvements in gas ranges, heating appliances, heaters and refrigerators, and collected over $1,000 in War Bond prizes offered by the Post-war Appliance Committee, headed by W. H. Jacobs of Southern California Gas Company.

C. A. Swigart, P.C.G.A. and Jessie McQueen, A.G.A. draw "grab-bag" prize winners in P.C.G.A. Women's Committee Post-war Appliance Contest.

The Women's Committee, led by Gladys Warren, turned in 155 entries proposing additions to gas ranges. Although unanimous in their acclaim of the "certified performance" of present models, the women visualized many "gadgets" that will be studied by manufacturer-members of the Association for their practicability and economic value. Included were ideas for ovens that could be adjusted for height, glass ovens, two-oven ranges with separate controls, built-in cabinets and other convenience-devices, built-in pressure cookers, tube lighting, wider use of light-weight metals and many other innovations.

Entries also included 114 from various sales department groups and 140 from service groups. These, mostly by men employes, dealt with improvements in heating equipment, burners, gas refrigeration, automatic control devices and other technical subjects.

The winners were: Women's Division—1st prize, $100 War Bond, Phyllis Hopson, Southern California Gas Company, Los Angeles; 2nd prize, $75 War Bond, Helen A. Lenning, Southern California Gas Company, Porterville; 3rd prize, $50 War Bond, Mrs. Annabelle Vaughn, Portland Gas and Coke Co., Portland; 4th prize, $25 War Bond, Jane Stille and Ellen Scoular, Southern Counties Gas Co., Santa Monica.

Sales, Service and Installation Divisions—1st prizes, A. R. Maughan, Pacific Gas and Electric Company, Modesto and B. H. Scott, same company, Lodi; 2nd prizes, A. L. McAlpine, Southern California Gas Company, Hanford and H. M. Wilcox, Southern Counties Gas Company, Ventura; 3rd prizes, L. O. Howell, Southern California Gas Company, Visalia and George Rusher, same company, Los Angeles; 4th prizes, Dorothy Schwarz and John G. Nordin, Southern California Gas Company, Los Angeles.

Some 42 other prizes were awarded in various amounts of war stamps. The Judges were members of the Post-War Appliance Committee and included W. H. Jacobs, Chairman, Southern California Gas Company, Los Angeles; F. U. Naylor, Pacific Gas and Electric Company, San Francisco; Klaas A. Eisinga, Continental Water Heater Company, Los Angeles; W. M. Couzens, Gaffers and Sattler, Los Angeles; J. E. O'Hagen, Grayson Controls Ltd., Los Angeles, and C. A. Miller, Servel Inc., San Francisco.

Controllers Institute of America

Lloyd D. Tracht, assistant secretary of the United Gas Corp., operating division, has been elected a vice-president of the Houston Control of the Controllers Institute of America.

Victor C. Seiter, controller of the Citizen's Gas & Coke Utility, has been reelected a director of the Indianapolis Control of the Controllers Institute of America.

GOODMAN
USED SINCE 1897
"Z" HANDLE & LOCKING SLEEVE
GAS MAIN STOPPER

The Reliable Shut-Off for Street Mains

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

P.U.A.A. Contest Winners

Entries in a contest to determine the best advertising developed by utility operating companies in 1942 established a new high record, according to a statement by National Contest Committee Chairman, E. N. Pope, of Raleigh, N. C.

The contest is conducted annually by the Public Utilities Advertising Association and is open to all operating utility companies in the United States and Canada regardless of membership in the Association. "Not only was the number of companies entered in the contest this year substantially greater than usual," said Mr. Pope, "but the quality of advertising showed marked improvement."

Advertising was entered in eighteen classifications embracing all media. Winners of National Awards in the various classifications were as follows:

Classification No.		National Winner
1	Public Relations Newspaper Advertising	Philadelphia Electric Company
2.	Newspaper Advertising Supporting War Effort	Public Service Co. of Oklahoma
3.	Nutrition Promotion	New Orleans Public Serv., Inc.
4.	Customer Service Newspaper Advertising	Portland Gas & Coke Co.
5	Campaigns	Duquesne Light Co.
6	Newspaper Advertising (for Transportation Co.'s)	New Orleans Public Serv., Inc.
7	Employee Magazine	Niagara - Hudson Power Corp.
8	Employee Newspapers	Cincinnati Gas & Electric Co.
9	Bill Enclosures for Residential Customers	Potomac Edison Company
10	Direct Mail Advertising — Residential	Georgia Power Company
11	Direct Mail Advertising — Industrial and Commercial	Georgia Power Company
12	Special Booklets, Pamphlets, Etc.	Duquesne Light Company
13	Window or Inside Display	New Orleans Public Serv., Inc.
14	Outdoor Advertising of All Types — Painted Bulletins, Posters, Vehicle Posters, Etc.	B. C. Electric Railway Co., Ltd.
15	Radio Advertising	Duquesne Light Company
16	Annual Reports to Stockholders	Duquesne Light Company
17	Annual Reports to Employees	Portland General Electric Co.
18	Motion Pictures	Pacific Gas & Electric Company

Certificates of award to both National and Regional winners were presented at a conference of the Association held at the Edgewater Beach Hotel, Chicago, on June 24th and 25th.

David L. Brown Named Division Manager

David L. Brown is the new division manager of the Pontiac Division of Consumers Power Company, having been named to succeed the late Birum G. Campbell.

Mr. Brown's first contact with the utility business was as a construction foreman on gas plants and distribution systems in Texas, 31 years ago. Later he was superintendent of production for the Corpus Christi Gas Company, Corpus Christi, Texas, and for the last 26 years he has been superintendent of gas distribution for Consumers Power Company's Pontiac Division, where he has a host of friends throughout the territory.

Wilson Leaves P.A.W.

The resignation of Dustin W. Wilson, technical consultant of the Refining Division, has been accepted by Petroleum Administrator for War, Harold L. Ickes. The resignation was effective July 31. He joined the staff of the P.A.W. in July, 1941.

Widely recognized as a refining technologist, Mr. Wilson has been an active chemical engineer for some 26 years.

In 1923, Mr. Wilson became associated with the Iroquois Gas Corporation of Buffalo, where he served as chemical engineer in charge of special operations and development and construction work. Three years later, he went with the Wilputte Coke Oven Corporation, of New York City, to engage in development work and operations of coke ovens and by-product plants.

During 1928, he served as vice-president of the Dry Quenching Equipment Corporation of New York and was in charge of engineeering and sales for that organization. From 1929 to 1930, he was with the M. W. Kellogg Co., of New York, as a chemical engineer engaged primarily in the designing and construction of oil refinery equipment.

Arc Welding. Volume 2 No. 1 of Hobart Arc Welding News, published by Hobart Bros. Company of Troy, Ohio, is replete with illustrations and descriptive matter on many applications of arc welding in industrial work. Copy will be sent on request.

REED'S 4 WHEEL
Razor Blade Pipe Cutters

IDEAL FOR ANY TRENCH OR OTHER CLOSE QUARTER JOBS

$5.46 F. O. B. ERIE

Capacity
½" to 2"
Weight 5 lbs.

The REED FOUR WHEEL Cutter operates with a short back and forth motion through only one-third of a circle. Each of the four wheels exerts the same pressure on the pipe, and all 4 therefore cut evenly and completely through the pipe at the same time.

Equipped with Reed special alloy RAZOR BLADE Wheels, which cut with remarkable ease, leave little burr, and have a long life of useful service.

A sample cutter for test and trial may be ordered on memorandum invoice, to be paid for if retained or returned for credit if unsatisfactory. Try it once, and you will use no other.

REED MFG. COMPANY
1436 W. 8th Street • ERIE, PA.

Meter Company Executives Serve Country

Four of the top executives of the Pittsburgh Equitable Meter Company, Pittsburgh, Pennsylvania, are now active participants in various branches of Governmental Service.

Colonel Willard F. Rockwell, President who has been in the Army Reserve over twenty years, has been serving as Director of Production for U. S. Maritime Commission in Washington, D. C., since April 7, 1942. He was appointed to this post on the recommendation of General Knudsen and at the request of Admiral Emory S. Land, Chairman of the Commission. In this capacity, he is in charge of the production requirements for cargo vessels ordered by the Commission and must see that schedules are maintained. He is a member of the Executive Committee of the Army and Navy Munitions Board, the Material Requirements Committee and Scheduling Committee of the W.P.B., as well as serving on numerous other committees.

Allen D. MacLean, Vice President and Chief Engineer, is also in Washington with the Maritime Commission serving as Assistant Director of Production.

Private W. F. Rockwell, Jr., Vice President and Comptroller, is in training at the Army Ordnance Officers' School, Aberdeen Proving Grounds, Aberdeen, Maryland.

Captain A. E. Higgins, Vice President and Sales Manager, a Reserve Officer of many years standing, was on May 8th commissioned Major and assigned to active duty with the U. S. Air Corps.

Active in Government Service. Left to Right:—Col. W. F. Rockwell, W. F. Rockwell, Jr., Major A. E. Higgins, Allen D. MacLean.

CONVENTION CALENDAR

September

22-23 *Pacific Coast Gas Association*, Annual Meeting, Ambassador Hotel, Los Angeles, Calif.

October

5-7 *National Safety Congress*, Hotel Sherman, Chicago, Ill.

11-13 *American Gas Association*, Annual Meeting, Jefferson Hotel, St. Louis, Mo.

Bristol Co. Appointments

J. W. Peckham has been appointed Manager of the Development and Design Engineering Department for The Bristol Company, Waterbury, Conn.

Mr. Peckham was graduated in electrical engineering from Rhode Island State College in 1921, after which he joined the Radio Research Department of the General Electric Company. In 1922 he joined the Bristol radio engineering department. He will make his headquarters at the general offices of the company, Waterbury, Connecticut.

E. Nuber has been appointed Manager of the Pacific Coast Branch Offices and Factory. Mr. Nuber joined The Bristol Company in 1929 as Sales Engineer and since then has represented them at their Boston, Akron, Waterbury, Birmingham, Chicago, and Los Angeles Offices at various periods during his association with the company. He will make his headquarters at the company's branch offices at 40 Berry Street, San Francisco, California.

Army-Navy E Award For Tappan

The Tappan Stove Co., Mansfield, O., manufacturers of the Tappan Sky Kitchen for Navy Patrol Bombers, and the Tappan Airplane Refueling System received the Army-Navy "E" award June 16.

At the Tappan plant, a large audience witnessed the presentation of the "E" flag to Paul R. Tappan, president, by Lt. Com. A. E. Heiser. A color guard of WAVES raised the flag.

Army-Navy "E" pins were given to Tappan employees by Major Albert C. Crawford.

The Sky Kitchen consists of a refrigerator and galley, with range, sink and cupboard space. The refrigerator is the same size as those used in average homes, yet weighs only 48 pounds.

The Airplane Refueling System includes four fuel cans and a funnel, adjustable to fit any airplane wing. Its special design permits four cans of gasoline to be poured simultaneously at the rate of 40 gal. per minute.

D. D. Foster Now Sales Head of Pittsburgh Equitable

D. D. Foster

Announcement has been made by Major A. E. Higgins, Vice President of the Pittsburgh Equitable Meter Company, who is now in active service in the Army Air Corps, of the appointment of Donald D. Foster as Assistant Sales Manager.

Mr. Foster formerly was District Manager for the Pittsburgh territory. In his new capacity he will be acting head of the Sales Divisions for both the parent concern and subsidiary, the Merco Nordstrom Valve Company. He is a native of Pittsburgh and a graduate of Carnegie Institute of Technology.

CHEMICAL TABLES

A Handbook of selected subjects from the Handbook of Chemistry & Physics 1938 Edition.

Subjects covered include Mathematical Tables; Properties and Physical Constants of Organic and Inorganic Compounds; General Chemical Tables; Specific Gravity and Properties of Matter; Heat and Hygrometry; Electricity; Light; Quantities and Units. Also other miscellaneous subjects.

Sectionally arranged with a complete index. Size 5" x 7¼", 1390 pages, flexible leatherette cover.

$1.00 a copy postpaid — American Gas Journal, 53 Park Place, New York

BARBER
Gas Pressure REGULATORS

Sizes ¼ up
Certified by A. G. A. Testing Laboratory
Write for Prices

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, O.

CP Gas Ranges Promoted For Post-War Markets

Looking forward to rich post-war markets, plans to keep Certified Performance Gas Ranges before the American public have been announced by the CP Range Division of the Association of Gas Appliance and Equipment Manufacturers.

Advertising and publicity will be directed towards assisting gas companies, gas range dealers and department stores to publicize "Gas for Cooking" and "CP Gas Ranges for Cooking Perfection."

In addition to trade publication advertising, an advertising mat service is being made available for use in local newspapers by retailers and gas companies. The theme of these ready-to-print advertisements will be, "Buy War Bonds Today for the CP Gas Range You'll Want Tomorrow."

The Certified Performance Gas Range Program was inaugurated by the gas industry back in 1938 to establish uniform high standards for gas cooking appliances and to serve as a buying guide for the public. Many manufacturers incorporated the Certified Performance features in their ranges and more than a million dollars was spent in promoting and advertising the CP Seal. Gas companies actively supported the program because it provided an opportunity to obtain better grade merchandise in their customers' homes. The program was also actively supported by gas range dealers and department stores in all parts of the country.

As a result of the CP Program, utilities and dealers alike reported increased unit sales of all Gas Ranges and substantial increase in the average selling price per range.

Specifications of post-war CP Gas Ranges are now being considered by the combined Post-War Planning Committees of the American Gas Association and the CP Gas Range Division of the Association of Gas Appliance and Equipment Manufacturers.

Bi-Monthly Billing Basis Has P.S.C. Approval

The plan of the Consolidated Edison Co., New York, to bill gas and electric customers bi-monthly, has been approved by the Public Service Commission.

The notice states that half of the Edison System customers in Manhattan, the Bronx and Queens will receive August bills as usual, based on meter readings covering one month's service. Thereafter this group will receive bills in October, December and every second month after that, based on meter readings for two months' service. The other half of the customers will receive no bills in August but will receive bills for two months' use of electricity and gas in September, November and every two months thereafter, based on meter readings covering two months' service.

Customers who desire to receive a monthly bill may arrange in advance with the companies to do so by reading their own meters in the intervening months. Forms for this purpose will be supplied by the companies on request.

Oil and Gas Section, Engineers' Society of Western Pennsylvania, Holds Technical Meeting and Dinner

With the annual golf tournament a war casualty, due to the ban on pleasure driving in the East, the Oil and Gas Section of the Engineers' Society of Western Pennsylvania, on Friday, July 16th, transferred summer activities to the William Penn Hotel in Pittsburgh.

D. D. Foster, (left) Pittsburgh Equitable Meter Company, Chairman Oil and Gas Section, and H. H. Pigott, Equitable Gas Company, Committee Chairman for Dutch Treat Party. Both events were sponsored by the Engineers' Society of Western Pennsylvania.

A total of 176 members turned out for a technical meeting in the afternoon, followed by a reception and dinner in the evening. The afternoon program was in charge of D. D. Foster, Assistant Sales Manager of the Pittsburgh Equitable Meter Company. B. C. Thiel, Consulting Engineer for the Cooper Bessemer Corporation, read a paper "Modern Compressor Stations," and James F. Swain, Geologist with the firm of Huntley and Huntley, covered the subject of "Interpretation of Driller's Log." Through the courtesy of the Barrett Division, Allied Chemical and Dye Corporation, the group was then shown the motion picture "Oil for War"—the story of the "Big Inch" Line.

A "Dutch Treat" reception and dinner followed, under the sponsorship of a committee headed by H. H. Pigott of the Equitable Gas Company.

Court of Appeals Upholds Washington Gas Rate Rise

The United States Court of Appeals has held that the Office of Price Administration was without authority to invoke its price control regulations to halt an increase in public utility rates charged by Washington Gas Light Co.

The decision upheld an order of the District of Columbia Public Utilities Commission, issued Oct. 13, 1942, granting an increase in the rates amounting to an estimated $201,000 annually, retroactive to Sept. 1, 1942.

The rate increases became effective when the district court stayed its judgment, pending appeal. Since, however, the company has made some refunds to customers under a provision in the Public Utilities Commission order directing refunds if the company showed sufficient profit to pay an excess profits tax.

Servel Offers Aids for Garden Crops

An opportunity for gas companies throughout the country to render a special service to customers in canning victory garden crops is being offered by Servel, Inc., Evansville, Ind., through the medium of a timely, extensive Home Volunteer educational program on home canning and dehydration during summer months.

The program which aims to supplement the usual work in food preservation the gas companies carry on during these months, takes in a sound motion picture in color; booklets on the subjects of canning and dehydration; special guest speakers on "Fashions in Rations," Servel's weekly radio presentation of wartime food facts and rationing news; and various promotional aids.

In the motion picture, entitled "Canning the Victory Crop," canning methods which have been approved by the Department of Agriculture are demonstrated by home economists who are specialists in this field. The picture is a full color 16 mm. sound film running about 25 minutes.

Servel is official distributor of the film for the gas industry. Gas companies may obtain its use without charge for showing at home canning demonstrations, by writing the Servel regional office in their particular locality. Exact dates on which the film is desired, should be specified in the request.

Since the film can cover only so much ground on canning fruits and vegetables because of its length, a special booklet, "Canning the Victory Garden Crop" has been prepared. It is for use in conjunction with the picture. Time charts, recipes, and instructions on preparation and canning all types of fruits and vegetables are included in this booklet.

While it is suggested that a copy of the booklet be given every one who sees the film, as a reminder of the technique illustrated in the picture, general distribution is recommended. Gas companies may obtain a supply of these booklets at cost through Servel. There is no advertising matter either in the film or the booklet.

Servel also is planning to make available to gas companies, booklets on home food dehydration issued by the Department of Agriculture. These are expected off the press very shortly.

To assist gas companies in promoting this educational program, Servel is offering a number of promotional aids. These include four-color posters, newspaper mats, and publicity stories.

Farris Establishes Valve Repair Division

This division of the Company is manned by skilled mechanics engaged in the actual manufacturing of valves; and is fully equipped to speedily recondition and reconstruct all types of reducing, relief, and standard or special valves and control apparatus. Facilities of the department also include complete testing apparatus. Inquiries should be addressed to the Company at Ridgefield, New Jersey.

INDEX TO ADVERTISERS

American Meter Co. ..... —
Assn. of Gas Appliance and Equipt. Mfrs. .... Back Cover
Barber Gas Burner Co., The 37
Besse, Osborn & Odell ..... —
Blaw-Knox Company ..... —
Carbide & Carbon Chemicals Corp. 22
Cast Iron Pipe Research Assn., The ..... —
Chaplin-Fulton Mfg. Co., The ..... —
Clark Bros. Co. ..... —
Cleveland Gas Meter Co. 31
Cleveland Trencher Co. 27
Clipper Manufacturing Co. 29
Coal Carbonizing Co. ..... —
Connolly Iron Sponge & Governor Co. 8
Cooper-Bessemer Corporation ..... —
Cruse-Kemper Co. 28
Dresser Mfg. Co. ..... —
Estate Stove Co. ..... —
Gas Machinery Co. ..... —
Gas Purifying Materials Co. 31
General Coal Co. ..... —
Lambert Meter Co., Inc. 29
Lattner Mfg. Co., P. M. 32
Lavino & Co., E. J. 24
Lincoln Electric Co. ..... —
Merco-Nordstrom Valve Co. 19-20
Metric Metal Works ..... —
Norton Company 6
Norwalk Valve Co. 30
Payne Furnace & Supply Co. 26
Phillips, Alfred I. ..... —
Pittsburgh Coal Co. ..... —
Pittsburgh Equitable Meter Co. 2
Reed Manufacturing Co. 36
Reynolds Gas Regulator Co. 24
Ridge Tool Co. 29
Robertshaw Thermostat Co. ..... Front Cover
Roper Corp., Geo. D. ..... —
Safety Gas Main Stopper Co. 35
Semet-Solvay Engineering Corp. 3
Servel Electrolux Division ..... —
Smith Corporation, A. O. ..... —
Sprague Meter Co., The ..... —
Stacey Bros. Gas Construction Co. 23
Stacey Manufacturing Co. 34
Superior Meter Co. 17
Union Carbide & Carbon Corp. 22
United Engineers & Constructors, Inc. 5
Water Leak Detector Co. ..... —
West Gas Improvement Co. ..... —
Worthington Pump and Machinery Corp. ..... —

Richmond, Va., Installs 10-Year-Old Cast Iron Pipe For Gas Mains

Richmond, Virginia, recently has laid a line of 10-year-old Cast Iron Pipe in the City's high pressure gas distribution system. The pipe is 12-inches in diameter, plain ends, and 18-feet long and slightly less than the standard A.G.A. thickness of 0.54-inch.

This 12-inch gas pipe was purchased from Boston, Massachusetts, and was located through the American Gas Association. Richmond needed the pipe to increase the gas supply to the South Richmond area and the War Production Board was willing for Richmond to install the pipe if second-hand material could be obtained.

This Cast Iron Pipe had been kept in open storage for quite a long time and consequently had to be cleaned before being installed. The pipe of course was uncoated and in spite of no protection from the weather during its storage, deterioration was so slight as to be insignificant.

After the pipe was thoroughly cleaned, the plain ends were painted in order to make a suitable surface for the application of the couplings. This simple treatment was so effective that when the pipe was installed and tested at 50-pounds air pressure per square inch, the line was tion of Marsden Smith, Chief Engineer found to be almost perfectly tight.

The pipe was installed under the direc- of the Department of Public Utilities, Richmond, Virginia.

Marcello A. King Now With Worthington

Worthington Pump and Machinery Corporation announces that Marcello A. King has joined the organization as Executive Engineer of its Moore Steam Turbine Division, Wellsville, New York, in

M. A. King

charge of design, research, testing, and service. Engaged in turbine engineering and manufacture since his graduation from the University of Michigan in 1916, he was with the Kerr Turbine Company and later with the Elliott Company where he held the position of Manager of Engineering. Mr. King has been active in trade association work and is widely known in the steam power field.

Consolidated Edison Co. Promotions

Title changes in the Gas Production Department of Consolidated Edison Company have been announced, headed by that of Oliver H. Smith, former assistant manager, who has been made manager of the department, succeeding Robert A. Carter who died in April. At the Astoria Plant, Roland H. Strader has been named general superintendent, and Henry L. Jochum and Karl B. Weber have been made superintendents of the mechanical and production departments respectively. These changes follow the retirements of N. J. Sperling, former general superintendent, and T. S. Barlow, former production superintendent.

Mr. Smith has been with the company since 1912 when he started as superintendent's assistant at the Ravenswood Works of the New Amsterdam Gas Company. Transferred to Consolidated Gas as assistant to the engineer of manufacture in 1923, he became assistant engineer of manufacture two years later. In 1936 he became assistant engineer of gas production.

Mr. Strader had been assistant superintendent at Astoria since 1929, Mr. Weber had been superintendent's assistant since 1923, and Mr. Jochum had been assistant superintendent since 1916, mainly in mechanical work.

Book Reviews

Plumbing Practice and Design, Volume I, by Svend Plum. John Wiley & Sons, Inc., 440 Fourth Avenue, New York, N. Y. 308 pages, 5⅞ x 9, cloth. Price $4.50.

Here is a book which we have no hesitation in recommending to those of our readers who are in any way interested in building piping, plumbing, fire protection or appliance installation.

The book is both a text book and a handbook, with specification data tabular material and diagrammatic illustrations predominating. It is the type of book that should be of constant practical use for reference purposes.

The contents include the following:

Corrosion—Including types of corrosion, controlling factors in corrosion, resistance of various metals to corrosion, soil corrosion, coatings, corrosion due to flue gases and chimney linings.

Materials—Including information on chemical analysis, ASA specifications, ASTM specifications, etc.

Pipes and Fittings—94 pages devoted to steel and cast iron pipe and fittings, including standards, dimensions, etc.; copper pipe and tubing; earthenware pipe and fittings; linings and coatings, etc.

Valves and Controls—Including standards, dimensions, etc., for different types of valves, including pressure reducing valves.

Fixtures and Accessories—66 pages devoted to plumbing fixtures and of least general interest to members of the gas industry.

Pumps—A brief but good description of different kinds of pumps and their applicability to building service.

Fire Protection—Including fire extinguishers, standpipe and hose systems, automatic sprinkler systems and outside protection.

Air Compressors and Piping and Vacuum Cleaning Equipment.

✣

Labor Arbitration—Principles and Procedures, by John A. Lapp. National Foremen's Institute, Inc., Deep River, Connecticut. 1942. 250 pages. Price $3.50.

Beginning with a concise exposition of the whole field of labor arbitration, and description of the various types of labor cases and the laws pertaining to arbitration, Dr. Lapp goes on to provide a very detailed guide to the mechanics of conducting arbitration. His chapters on the Arbitration Tribunal, the Organization of an Arbitration, Procedures, Preparing the Case, The Award, are particularly definite and complete.

Dr. Lapp is well qualified to write on this subject. He has been Chairman of the Coal Labor Board II Division, member of the Petroleum Labor Policy Board, Head of Labor Relations for the Public Works Administration, Labor Advisor to the Rural Electrification Administration, Referee of Jurisdictional Disputes for the Building Trades, Referee National Railroad Adjustment Board. His experience during the past ten years covers the arbitration of over 400 cases involving all kinds of labor disputes, such as wages and working conditions. Also, it is probably the first comprehensive work devoted entirely to the subject of labor arbitration.

The principal subjects covered are: The Field of Arbitration; Types of Labor Cases; The Law of Arbitration; The Arbitration Tribunal; The Organization of an Arbitration; Procedure; Preparing the Case; The Award; The Arbitrator's Responsibility; an Appendix containing actual examples of Arbitration Agreements.

✣

Breaking the Skilled Labor Bottleneck—a manual of procedures—by Eugene J. Benge, Management Engineer. Published by National Foremen's Institute, Inc., Deep River, Conn., September 1, 1942. 47 pages, 8" x 10", cloth bound, with many charts and tables. Price $2.00.

Early in the summer of 1940, the author undertook a study of the impending labor shortage for the National Foremen's Institute, Inc. At that time it seemed that the greatest pinch in skilled labor would not be felt for three years. But the war has brought this problem to the door step of every indusry, including the gas industry, *now*.

The author quite properly approaches the problem from the standpoint of the typical manufacturing concern which is converting to the production of war materials or is endeavoring to increase the output of existing goods. In that respect the problems of the gas industry are obviously somewhat different. However, we are faced with a serious problem of skilled labor shortage; and the author's suggestions deserve our careful study with a view to their adoption in whole or in part in the very many instances in which they may be applicable.

Breaking the Skilled Labor Bottleneck explains how to maintain peak production; what steps to take to train "green" hands in half the time usually required; how to utilize present labor resources to greatest advantage; how to divide and allocate work to spare highly trained men for their own specialized skills; what to do about upgrading; what training principles to follow; how to obtain more satisfactory results in supervision; practical psychological attitudes to be followed by foremen, supervisors and plant heads, and many other plans, case histories, suggestions and tested ideas to solve the problems of skilled labor shortage. This manual is based on the author's many years experience with workers and plant executives of all types.

The book is divided into two main sections: (1) The Nature of Skill, and (2) Overcoming Shortages.

The first of these includes discussion of What is "skill," Muscular Skill, Sensory Skills, Thinking Skills, How Skill is Acquired, Analyzing Skill, and Some Training Principles.

In the matter of overcoming labor shortages, the author covers:

(1) Selection, including an Inventory of the Present Force.

(2) Training, including Work Analysis, Case Study, Using Job Descriptions, Time Study Analysis, Upgrading Setup Work, Carrying out the Training, How Effective is Quick Training, and Apprentice Training.

(3) Motivation.

(4) Supervision.

Sam Tour and Co., Inc.

It is announced that the metallurgical laboratories that were established by Sam Tour during the 14 years he has been Vice President and Chemical and Metallurgical Engineer in charge of the Engineering Departments of Lucius Pitkin Inc. now located at 45 Fulton Street, New York City, will be operated as the laboratories of Sam Tour & Co., Inc., with main offices at 65 Pine Street.

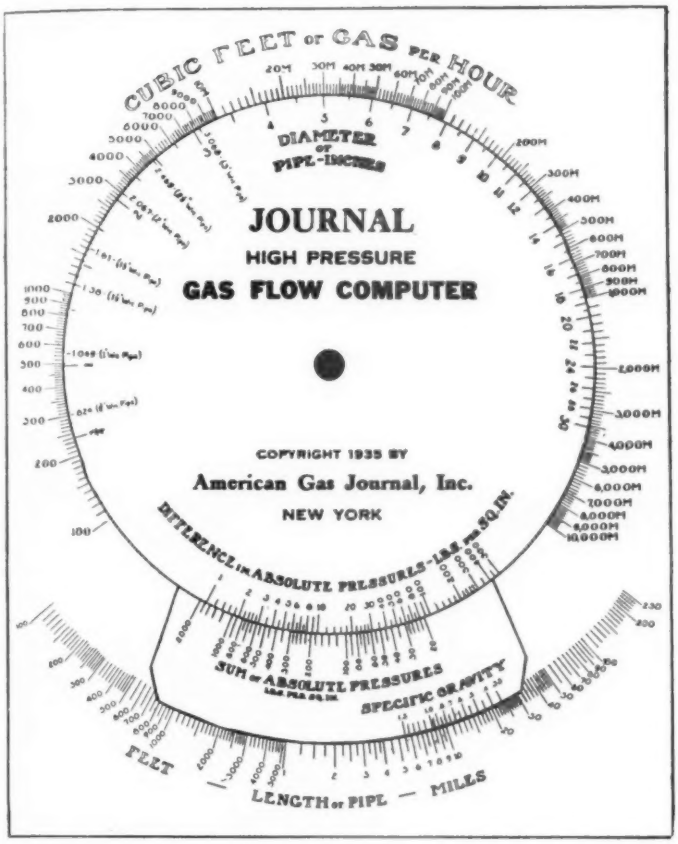
Mr. Tour was graduated in chemical engineering by the University of Colorado and won a Master of Science degree at the University of Michigan. There he was awarded the Michigan Gas Association fellowship in gas engineering, which involves the handling of research problems in gas technology.

Associated with Mr. Tour in his new organization is the entire staff with which he has surrounded himself while building up the Pitkin engineering division.

✣

Roasting & Baking Ovens. A service and repair manual issued by G. S. Blodgett Co., 53 Maple Street, Burlington, Vt., contains information and prices on repair parts for their baking and roasting ovens. General operating and adjustment instructions are included.

"Journal" Gas Flow Computers



New Improved Gas Flow Computers now available of durable celluloid, encased in a convenient leatherette cover with complete instructions.

Actual Size 6¼ x 7½

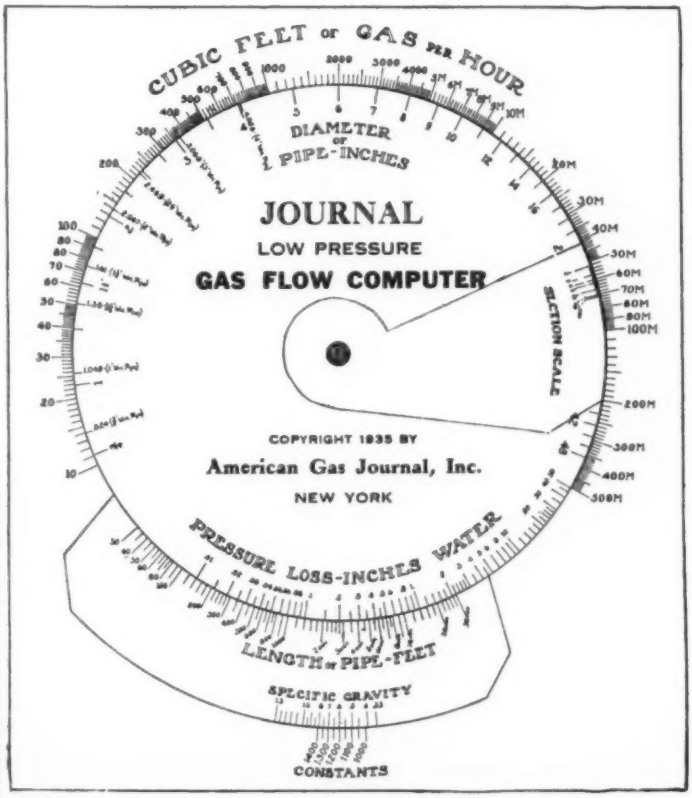
High Pressure Computer Range:

Cu. Ft. of Gas Per Hour—100-10,000 M
Diameter of Pipe Inches ¾-30
Difference in Absolute Pressure—Lbs. per sq. in. 1-500
Sum of Absolute Pressures—Lbs. per sq. in. 2000-20
Specific Gravity 1.5-.35
Length of Pipe—Feet 100-5000
Length of Pipe—Miles 1-250

Low Pressure Computer Range:

Cu. Ft. of Gas Per Hour—10 to 500 M
Pipe Diameter ¾" to 48" (including standard and actual weight up to 4")
Pressure Loss Inches .01-10.
Length of Pipe—Feet 30-30,000
Specific Gravity 1.5-.35
Constants 1400-1000

Price $3.50 Each, Postage Prepaid



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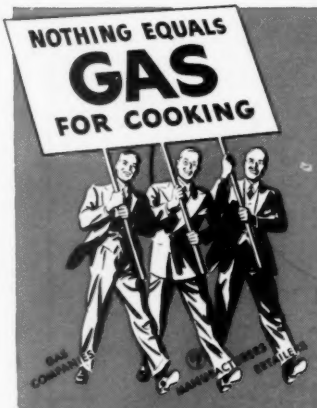
Specifications for post-war Gas Ranges bearing the CP Seal are being drawn up around conference tables all over America. Engineers, designers, home service experts and sales executives of retailers, gas utilities and manufacturers are combining their experience and ideas. Your advice and suggestions will be welcomed.

CP Gas Ranges incorporate the advantages of all other cooking appliances, plus features the best brains in the gas industry can devise. As a result, CP has changed "buying for price" to "buying for cooking performance".

In the confused maze of new, untried post-war products, CP again will be the American housewife's buying guide —the Seal that will help keep GAS the preferred cooking fuel in the homes of 85 million Americans.

To Help You Keep 'Em Sold

To help you pave the way for post-war business, advertisements dramatizing GAS for cooking and CP for cooking perfection are available for your use locally at a nominal cost. For proof sheets, write, CP Range Division, Association of Gas Appliance and Equipment Manufacturers, 60 East 42nd St., New York 17, N. Y.



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Working hand-in-hand with gas companies and retailers all over America, these CP Gas Range manufacturers are developing an even greater CP Gas Range Program for you in the bright post-war era.

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